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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

JUNE 1953

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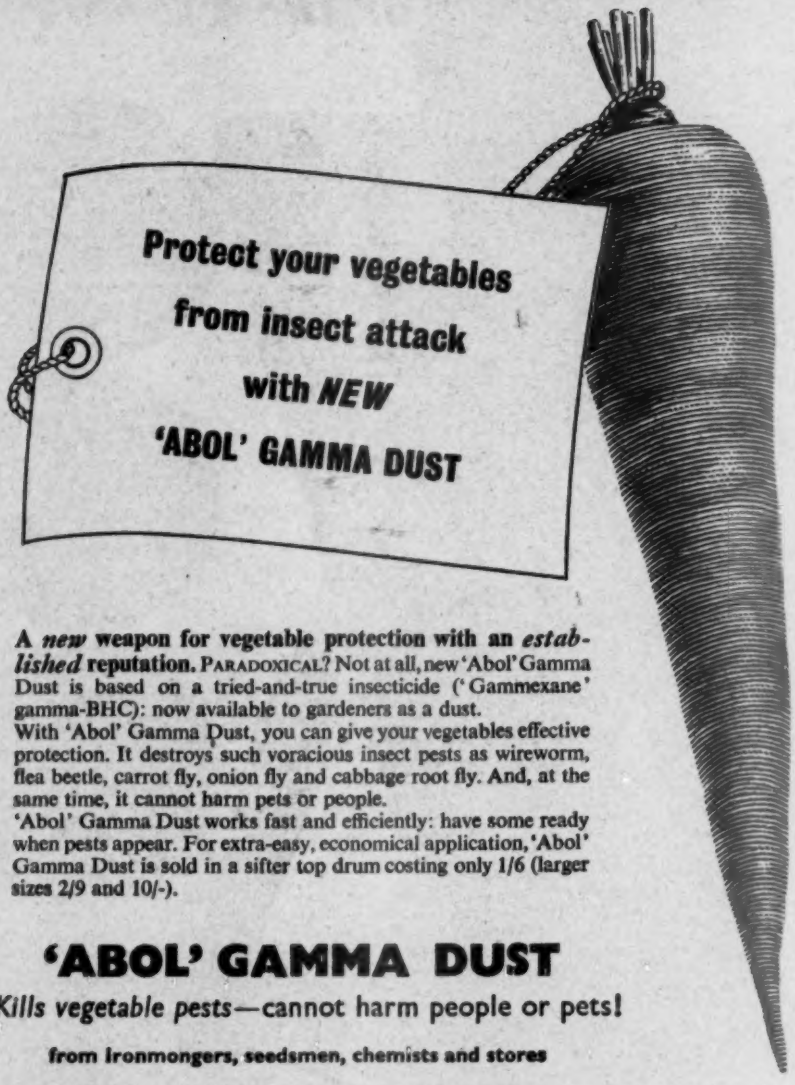

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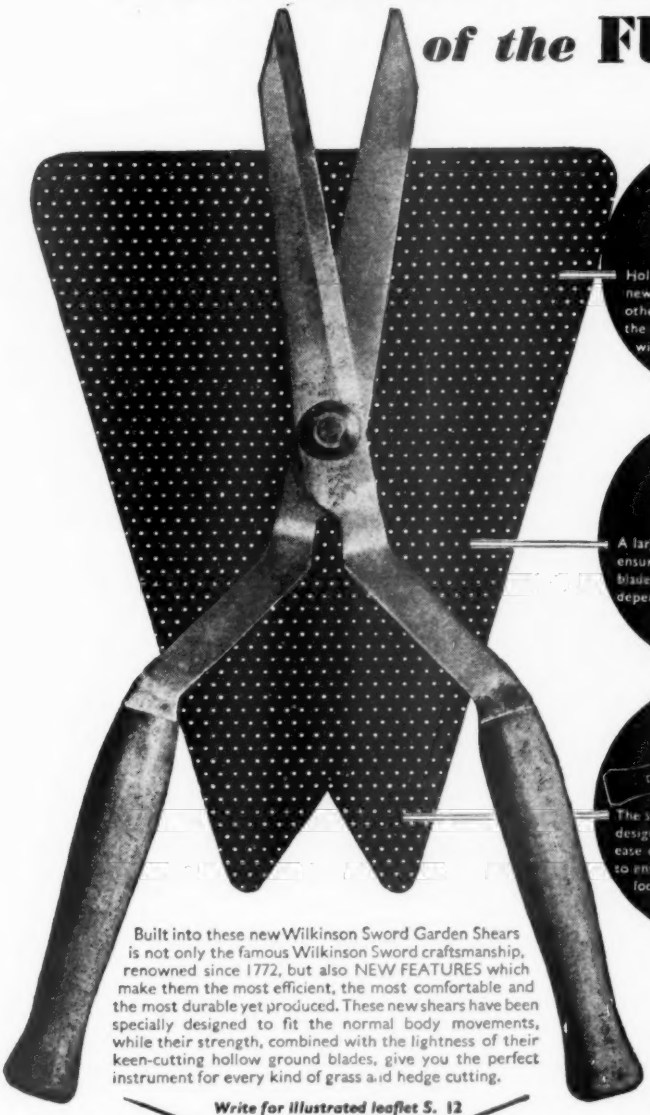

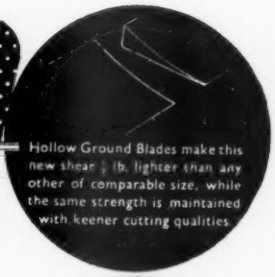

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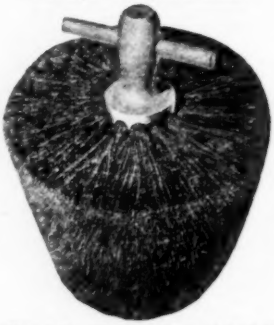

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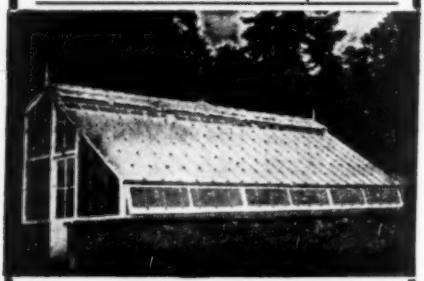

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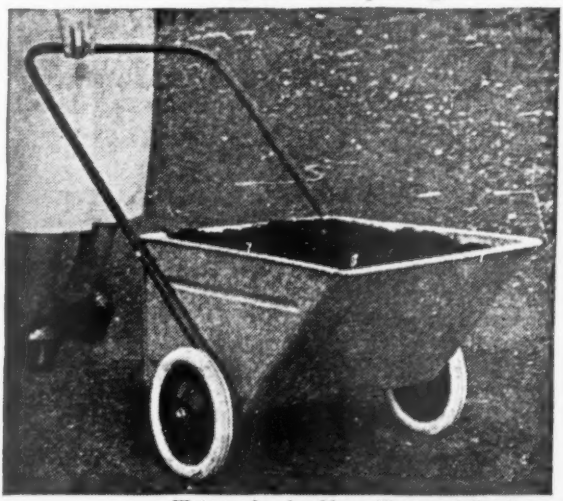

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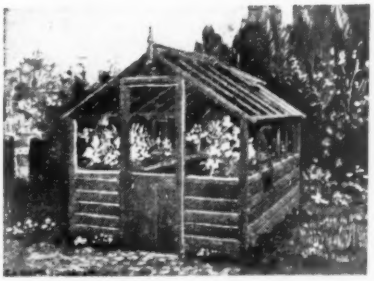

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXXVIII Part 6

June 1953

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JUNE AND JULY

Shows

TUESDAY, June 9 12 NOON to 6 P.M. WEDNESDAY, June 10 10 A.M. to 5 P.M.	Fortnightly Show. British National Carnation Society's Pink Competition. Iris Society's Competition.
TUESDAY, June 23 12 NOON to 6 P.M. WEDNESDAY, June 24 10 A.M. to 5 P.M.	Fortnightly Show. Flowering Tree and Shrub Competition. British Delphinium Society's Show. Cactus and Succulent Society of Great Britain's Competition.
TUESDAY, June 30 12 NOON to 7 P.M.	National Sweet Pea Society's Show.
FRIDAY, July 3 11 A.M. to 7 P.M. SATURDAY, July 4 10 A.M. to 5 P.M.	National Rose Society's Show.
TUESDAY, July 7 12.30 P.M. to 6. P.M. WEDNESDAY, July 8 10 A.M. to 5 P.M.	Fortnightly Show. Fruit and Vegetable Competition. Geranium Society's Competition. British National Carnation Society's Show (12 NOON to 8 P.M., and 10 A.M. to 5 P.M.).

Shows—*continued*

TUESDAY, July 28
12 NOON to 6 P.M.
WEDNESDAY, July 29
10 A.M. to 5 P.M.
} Fortnightly Show.

Lectures

TUESDAY, June 9, at 3 P.M. "Mixed Shrub and Herbaceous Borders" by THE HON. ROBERT JAMES.
TUESDAY, June 23, at 3 P.M. "New Roses" by MR. HARRY WHEATCROFT.
TUESDAY, July 7, at 3 P.M. "The Cultivation of Nomocharis" by MAJOR W. G. KNOX FINLAY.
TUESDAY, July 28, at 3 P.M. "Hardy Plants for Cutting" by MRS. FRANCES PERRY.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the second or succeeding day being in each case a repetition of that given on the first.

Fruit Garden

July 1–2. Summer Pruning of Fruit Trees. (Commencing at 2 P.M.)

Flower Garden

July 29–31. Vegetative Propagation of Shrubs and Herbaceous Plants. (Commencing at 2 P.M.)

The Thirteenth International Horticultural Congress—The Thirteenth International Horticultural Congress, held in London in September, 1952, by the invitation of the British Government, was the first official International Horticultural Congress since 1938. In the interim much new knowledge became available, and at the 1952 Congress many of the world's leading research workers in horticulture contributed papers on their recent original work. These papers are being reported in full in the Congress Report, which will be published shortly and will be obtainable from The Secretary, price £2 4*s*. 9*d*., postage and packing included. For further details please see the advertisement elsewhere in this issue of the JOURNAL.

Code of Nomenclature—The revised version of the *International Code of Nomenclature for Cultivated Plants* is included in the report of the International Horticultural Congress. It is also available as a separate pamphlet, price 1*s*., postage 3*d*.

The Horticultural Show Handbook—For many years the Society's publication *Rules for Judging* has been the recognized work for the solution of problems connected with the framing and interpretation of horticultural show schedules and the judging of competitive exhibits. It has now been thoroughly revised and renamed *The Horticultural Show Handbook*. It contains, in addition to rules, suggestions for the guidance of organizers, schedule-makers, exhibitors and judges.

It should be consulted by all who have to do with horticultural shows. Price 2*s*., post free.

Pruning Hardy Shrubs—This pamphlet has been revised by its author, Mr. A. Osborn, and the new edition is available. Price 1*s*., postage 3*d*.

Saintpaulia Society—We have been asked to announce that the formation of a Saintpaulia Society is contemplated. Anyone interested should write direct to Mrs. M. F. Milsted at 5 Letcombe Avenue, Abingdon, Berks.

INVITED TRIALS, 1954–1955

The Royal Horticultural Society will carry out during the 1954–1955 season the following trials for which entries are invited.

1954

Vegetables

Lettuce (overwintering varieties)—½ oz. of seed of each variety. Entries to be received not later than July 31, 1953.

Flowers

Primula malacoides (only varieties introduced since 1947).
Primula sinensis (only varieties introduced since 1949).
Sufficient seed of each variety to raise 60 plants.
Entries to be received not later than June 30, 1953.

Tulip, varieties and hybrids of
Tulipa Fosteriana. 12 bulbs of each variety or hybrid.
Entries to be received not later than August 31, 1953.

1955

Flowers

Hemerocallis—3 plants of each variety.
Entries to be received not later than March 31, 1954.

Conditions for Entry to Trials

1. All entries must be made on the appropriate form obtainable from The Director, The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey.

2. The entrant must certify on the form either:

(*a*) that the variety or strain has been raised or developed by him;
or (*b*) that the variety or strain was, or is about to be, introduced by him to British commerce.

The entrant must also supply sufficient particulars of the history of the variety or strain to substantiate his certificate, but such particulars will not be published by the Society without the sender's consent.

3. Seeds and plants should not be sent until the entrant receives notification that his entries have been accepted.

4. For each entry accepted a fee of 10*s*. will be charged.

5. No firm or person may send more than 10 varieties of any one kind of seed or plant.

NOTES FROM WISLEY

IN the past three notes from Wisley we have discussed Camellias and Rhododendrons, two genera of plants which cannot be and are not grown by all our Fellows. This month we turn to a consideration of plants suitable for the herbaceous border which, in some form or other, is a feature of most gardens. June is the time of year when we see the start of the flowering season in the Wisley Herbaceous Borders and also in the many trials and collections of hardy herbaceous perennials situated on the Floral Trial Grounds and elsewhere.

Strictly speaking a hardy herbaceous border should contain only those plants that die down to the ground each autumn, survive the winter out of doors without protection and appear again the next year. Thus the use of Dahlias, Gladioli, early-flowering Chrysanthemums and annuals in the herbaceous border should not be encouraged although such plants do give a greater range of colour in the months of August and September when usually there is a preponderance of yellow flowers in the border. It is not proposed to discuss the many other herbaceous plants which are better situated in the rock garden or in the woodland garden.

The family of plants which in all probability contributes most to the herbaceous border is the Compositae. At Wisley one of the first plants we notice in the front of the border is the North American *Artemisia Ludoviciana* whose unbranched shoots with their white woolly leaves spring up from the ground in close formation and make a good foil for the many colours that are round about. Another useful North American plant for the front row is *Rudbeckia speciosa* whose flowers with orange-yellow rays surrounding a black-purple disk are open for such a long time. *R. Sullivantii* 'Goldsturm' is an improved form of *R. speciosa*, being considerably more free flowering and having longer ray florets. For the back of the border another *Rudbeckia* is *R.* 'Herbstsonne' whose brilliant yellow rays around a greenish disk are carried to a height of 6 feet. As the name implies the plant is of continental origin and means "Autumn Sun." It should not be corrupted to the meaningless 'Herbstone.' Another cone flower which is often confused with *Rudbeckia* is *Echinacea*, an American genus of two species whose ray florets are always rosy or purple whilst those of *Rudbeckia* are yellow.

Of Composites of medium height, *Achillea filipendulina* 'Gold Plate' with golden yellow flowers brightening the border from June to September is the best of its type. If cut when fully open and hung upside down in a dry shed the flowers retain their yellow colour for many months and thus are excellent for winter decoration. The blue heads of the Hungarian *Echinops bannaticus*, the so-called "Globe Thistle," are also most suitable for this purpose.

A plant that should be in every herbaceous border is *Helenium* 'Moerheim Beauty.' Raised about 1930 by the Dutch nurserymen

Messrs B. Ruys, who have introduced so many valuable plants, it grows to a height of 4 feet and has large deep bronze-red flowers 3 inches in diameter. All the varieties of *Chrysanthemum maximum* are desirable subjects for the border, the white blooms 2–3 inches across and carried to varying heights, being produced over a long period. The variety 'Esther Read' is best in the front and 'Wirral Pride' in the middle of the border. Both are very useful for cutting as are the flowers of Pyrethrum which is also a member of the genus *Chrysanthemum*, the garden forms being improvements of *C. roseum*. One of the newer varieties is Pyrethrum 'Brendan' whose bright cerise flowers are usually in evidence before May is out. Among other members of the Compositae for the middle and back of the border mention may be made of the Mediterranean *Lactuca Bourgaei* whose stout stems rise to a height of 6 feet and carry heads of lilac flowers, as well as of the varieties of the American *Heliopsis scabra* of which 'Patula' with chrome yellow frilled flowers and 'Incomparabilis' with semi-double flowers of bright golden orange are two of the best.

In the closely related family Campanulaceae, *Campanula persicifolia* 'Telham Beauty' has wonderful flowers of china blue which are twice the size of those of the type; there are also fine white-flowered seedlings and neither the blue nor the white flowers have lost anything in beauty and grace of form. There was figured in the *Botanical Magazine* in 1816 a plant under the name *C. persicifolia* var. 'Maxima' with flowers scarcely inferior to those of 'Telham Beauty.' Thus it is interesting to learn that forms of *C. persicifolia* equal to the best of to-day have been in cultivation for nearly a century and a half. Although *C. persicifolia* is well established in many localities in Great Britain, it is not really a native; its true home is Dalmatia.

Also in this family is the Chinese "Balloon or Bell Flower," *Platycodon grandiflorum*, with flowers of blue or white. The form 'Mariesii' is now considered to be a slightly dwarfer form of *grandiflorum* growing to a height of only 18 inches. This is a plant that does not like to be disturbed and so when the border is being replanted it should be by-passed.

In the family Labiatae there are many good plants for the Herbaceous Border and perhaps the best known is *Salvia* × *superba*, often incorrectly called *S. virgata nemorosa*. It was first grown at Kew at the beginning of the century and though its origin is unknown it is thought to be a hybrid of *S. sylvestris* and *S. villicaulis*, both of which are found growing together in South-Eastern Europe. It is a very good plant for a fairly dry position and is desirable not only for the flowers of violet-purple but also for the wine-coloured bracts which persist until autumn. As it is sterile it is the best propagated by soft-wooded cuttings taken in spring and placed in a cold frame. *S. haematodes* with light azure blue flowers hails from Greece, is of comparatively recent introduction and is well worth a place in the border; it is more or less a biennial and sets seed very freely. Although a native of Eastern South America, Brazil and Uruguay, *S. uliginosa* is hardy in all except the coldest districts, but at

Wisley usually is given a light covering of bracken in winter. It grows up to 8 feet high and the gentian blue flowers appear in September and are thus later than those of *S.* × *superba* and *S. haematodes*.

A useful plant for edging is *Nepeta Mussinii* of gardens which is probably a hybrid between *N. Mussinii* and *N. Nepetella* and should be called *N.* × *Faassenii*. It is seen to great advantage on the Broad Walk where it sets off the bright discordant colours of the Dahlias. Although it is sterile, whereas *N. Mussinii* sets seed freely, the hybrid is altogether a more desirable plant and can be propagated by division or by cuttings in spring. Also a member of the Labiatae and best placed in the front of the border and there providing a rosy crimson colour in late summer is *Physostegia virginiana* 'Vivid.'

In the family Scrophulariaceae, a close ally of the Labiatae, are such important horticultural genera as *Verbascum*, *Digitalis*, *Veronica* and *Penstemon*. Of the herbaceous Veronicas, *V. gentianoides*, forming glossy-leafed free-flowering mats, is always very pleasing with its light blue flowers well spaced on a spike that may be 18 inches long, while *V. exaltata* reaches 4 feet in height and has flowers of very similar colour. Of the garden race of hybrid Penstemons, which are not always considered to be fully hardy, we have *P.* 'Garnet' with deep red flowers that are carried on a stem 18 inches high from May to October.

Not many members of the family Saxifragaceae are suitable for the herbaceous border but some of the more attractive, especially for a moister position, are the Astilbes with their small flowers borne in profusion on spike-like panicles. Of the many hybrids raised by HERR ARENDS of Ronsdorf which are grouped under the name *A.* × *Arendsii*, mention may be made of 'Fanal' with panicles of bright red. The genus *Heuchera* also belongs to this family and likewise prefers a position that does not dry out too readily. The seventy or so species are natives of the North American continent, being distributed from Mexico almost to the Arctic. *H. sanguinea* with flowers of coral scarlet in the judgment of many is as good a plant as most of the hybrids and forms that are on the market. Not only are the flower panicles exceedingly light and graceful but the foliage is often conspicuously beautiful, particularly so in winter.

In the Rosaceae there are those useful plants for the front of the border and for cutting, the Geums. *G.* 'Mrs. Bradshaw' is a fine double-flowered scarlet form of *chiloense*, while 'Lady Stratheden' is a double golden yellow variety. *Sanguisorba obtusa*, the generic name referring to the reputed styptic qualities of the plant, is taller growing than these and thus better placed in the middle of the border and was introduced from Japan by Messrs. Barr & Son in whose nursery it first flowered in 1910. It is often known under the name *Poterium obtusum*. The pendent flowers of soft rosy pink are borne in short thick cylindrical tassels.

The genera *Clematis*, *Cimicifuga*, *Anemone*, *Thalictrum*, *Aconitum* and *Delphinium* are all represented in the herbaceous border and all belong to the family Ranunculaceae. Although most species of Clematis

are climbing plants, there is one at least which is eminently suitable for the open garden. This is *C. recta* which has numerous fragrant white flowers carried on an erect stem 3–4 feet tall. The large white flowers of *Anemone hupehensis* var. *alba* are an excellent foil to the mauve ones of the species and are very useful in the late summer when white flowers are not much in evidence. This plant is very often misnamed *A. japonica* but the latter rarely sets seed whereas the Hupeh plant is abundantly fertile.

Plants of delicate habit and decorative leaf are the Thalictrums and especially beautiful is *T. dipterocarpum*, the specific name referring to the two-winged fruits. The rosy mauve flowers with lemon yellow stamens are carried elegantly on a pyramidal panicle. *T. aquilegifolium*, with three-winged fruits, is one of the easiest border perennials to grow and opens its greenish or white flowers with their mauvy purple stamens in June.

Among the Monocotyledons the family Amaryllidaceae is represented by the genus *Alstroemeria*. Of the many forms of *A. aurantiaca*, 'Dover Orange' is particularly good. Like *Platycodon*, *Alstroemeria* resents disturbance at the root and should not be transplanted more than is absolutely necessary. In the closely related family Liliaceae there is *Hemerocallis*, a much neglected genus in Great Britain. One or two representatives are seen in the Herbaceous Border while at the Pinetum end of the border and a little to the north will be found a planting of the older varieties. The newer American varieties are not yet available in quantity in this country but it is hoped that some of them will be in the Gardens in the near future. Of the Lilies suitable for the perennial border the Madonna Lily, *L. candidum*, unfolding its pearly white flowers in June, takes pride of place. The variable *L. pardalinum* is also excellent; in its true form it has bright orange-red flowers with large purple spots on the lower half but there are many variations on this theme, some with more yellow ground colour and others with fewer spots.

On this question of plants suitable for the herbaceous border it must not be forgotten that the trials of flowers at Wisley provide a useful living catalogue of the many varieties of Anthemis, Bearded Iris, Coreopsis, Delphinium, Garden Pink, Lupin, Michaelmas Daisy, Paeony, Scabious and Solidago. These are the permanent trials and collections, but periodically invited trials of other hardy herbaceous plants are held so that in the course of time it is possible to see a great range of plants growing under similar conditions.

It is not possible, nor for that matter desirable, in an article of this nature to mention more than one or two varieties that are growing in the trials. In the Delphinium trial the varieties are divided into two groups; in the tall-growing Elatum section 'Charles F. Langdon,' medium blue with conspicuous black eye, and 'Blackmore's Glorious,' a light mauve shaded pale blue with large white eye, are outstanding; whilst of the Belladonna types, which are not so tall and in these days of labour shortage not so troublesome to grow for they do not require

so much staking, 'Wendy,' a gentian blue, and 'Blue Bees,' a clear pale blue are two of the most popular varieties.

The present-day Lupin owes its very important place in the garden to the work of the late MR. RUSSELL and of the varieties in the trial two of the most free-flowering are 'Blushing Bride,' an ivory white, and 'Thundercloud,' a deep violet blue self. Flowering at much the same time as the Lupins are the Bearded Irises, the trial of which is conducted in the borders on either side of the Lavender Walk which connects the frame yard with the terrace. In one of these, the Award of Merit Border, are collected the best of these Irises, which have received awards in previous years. 'White City,' a large-flowered white raised in England, and 'Helen McGregor,' an ethereal light blue raised in America and considered by many to be "A Queen of Irises" are two varieties of particular note. In addition to the Bearded Iris trial there is the invited trial of the varieties of *Iris sibirica* which may be seen at the greenhouse end of the Apple Walk.

The plants mentioned in this note are in large measure a personal choice. Clearly it must be left to each individual visitor to make his own selection of plants from the Herbaceous Border, the Trials and other parts of the Gardens.

SMALL HARDY BULBS

R. G. Walter

(*Lecture given on April* 14, 1953; THE HON. LEWIS PALMER *in the Chair*.)

I MUST, of course, give a liberal interpretation of the subject of this talk, grouping together loosely as "bulbs" what are more academically known as bulbs, corms and tubers. Hardiness is a relative term and size is in the eye of the beholder. If, therefore, I restrict my observations mainly to those items which can normally be found in a good comprehensive catalogue of miscellaneous hardy bulbs, I shall avoid whetting appetites which cannot readily be satisfied and if, further, I eschew generally the bewildering and rapidly increasing range of garden hybrid bulbs, we shall find that this rather large subject is confined within its proper boundaries.

It is perhaps rather refreshing, after the annual struggle to keep abreast of the new varieties in Daffodils, Tulips, Gladioli, and now even in Lilies, to realize that hybridists have not been so busy among the bulbs of lesser stature. Indeed the vast majority of their varietal forms are of chance origin either in nature or in gardens and comparatively few have been deliberately evolved. These little bulbs have a never-failing appeal. Is this because there has been no suspicion of "line-breeding" which—dare I say it—threatens to destroy the allure of the Daffodil, Iris, and Delphinium? I like bulbs. They are clean and satisfying to

handle, easy to plant and easy to dig up. They behave well and have a decent way of life, settling down and reproducing themselves without fuss. Furthermore, it is among these little bulbs that we find material for a matchless yet delicate display during the cold months when little else is in flower, and it is to these that we can so often turn to find some form of beauty which will flourish in some uncompromising position where little else will thrive.

Take, for instance, the humble Winter Aconite, *Eranthis hyemalis*. Many an arid slope underneath trees could show a torrent of these golden-yellow flowers bedecking the bare ground late in the winter. A larger species, *E. cilicica*, has paler flowers and bronzy foliage and possibly is less attractive. Both propagate themselves so freely from seed as to become, in some gardens, almost troublesome weeds. These two species have been crossed, the result being a very vigorous growing, very large-flowered Winter Aconite, especially suitable for the rock garden because the flowers are sterile and never set seed. When established, it will grow into a handsome specimen bearing a number of large clear yellow flowers. From this cross two distinct varieties appeared, the one called *E. Tubergeniana* and the other, somewhat later and a much deeper yellow, named *E. Tubergeniana* 'Guinea Gold.' Both are supreme winter-flowering rock-garden plants. All the Chionodoxas are also excellent for under-tree planting, thriving even in the shade of Beech or Evergreen trees, which is true of very few plants. But of these more anon. Particularly useful for all sorts of shady, awkward positions are the Snowdrops and none of the many varieties is more suitable for naturalizing in woodland and wild places than the Common Snowdrop, *Galanthus nivalis*. There are, however, many other species and varieties and it is possible to have some or other Snowdrop blossoming in your garden from October till April. To mention a few only, *G. nivalis Imperati*, from Southern Italy is very fine, tall and early flowering. *G. plicatus*, the Crimean Snowdrop, with broad, deep green leaves and large globular flowers, comes soon after. *G. Elwesii* from Asia Minor is also large and very handsome. Unlike other Snowdrops, it needs a hot, dry position; never plant it in grass. Finest of all and growing nearly a foot high is the 'Straffan' variety, considered by that great authority, MR. E. A. BOWLES, to be the most beautiful of all Snowdrops. It is a *nivalis* form said to have come from the Crimea. Certain types of *G. nivalis* indigenous to Greece flower in the autumn, but I do not think that any of these are readily obtainable at present. Snowdrops all need early planting and should be in the ground by September at the latest. The very best time for transplanting is actually when they are in flower though I fear that this is too often impracticable. Very closely related to Galanthus is Leucojum, the Snowflake. These, too, prefer very early planting, the spring Snowflake, *Leucojum vernum*, being far more attractive than the later and much coarser *L. aestivum*. The pure white, crinoline-like flowers, each segment tipped with green, have not the icy chastity of the Snowdrop but have a friendly sweet

scent, a quality oddly lacking in most of these smaller bulbs. *L. vernum Vagneri* is a tall, robust form from Austria, bearing twin flowers and var. *carpathicum* is equally beautiful with yellow-tipped segments. All are very easy, preferring a rich, moist soil in a cool position.

Other bulbs ideal for naturalizing in shady situations are the Erythroniums, dwarf Cyclamen and many forms of Anemone. The Erythroniums, or Dog's Tooth Violets, form a beautiful group, flowering in early spring. In nature they are found in light woodland or copses and become readily colonized in similar conditions in this country. They have a pleasant habit of seeding themselves about, and I know of no lovelier little plant for naturalizing in the woodland. The European species, *Erythronium Dens-canis*, beautiful though it is with its nodding Lily-like flowers in shades of white, mauve, or rose is far surpassed by its North American cousins which to my mind are among the most delicately graceful of all flowers. Of these the forms of *E. revolutum* are supreme with 10-inch stems bearing large white, pink, or deep rose flowers over silver mottled foliage. *E. californicum* is also very fine, with creamy-white flowers. I have known it nearly 18 inches high. *E. tuolumnense* is gay with clear deep yellow flowers and is the only member of its family with unmottled leaves, a lustrous bright green. All the Erythroniums make fine rock-garden plants but the American species are unfortunately becoming scarce. Round the bases of trees, even below conifers, plant groups of the dwarf Cyclamen. These extremely pretty, very hardy little plants will naturalize readily in well-drained positions, given an occasional handful of bone-meal where large trees tend to impoverish the soil. It is surprising how they will seed themselves about. The most popular and useful is *C. neapolitanum*, pink or white. It flowers in autumn with the greatest freedom producing, a little later, a low carpet of handsome silver-marbled leaves which persist well into the following year, forming a lovely groundwork for groups of such early spring-flowering bulbs as Snowdrops and Grape Hyacinths. My own favourite is the deliciously sweet-scented *Cyclamen europaeum*. Its deep rose flowers are produced in late summer, autumn or spring, according to location, and its silver-zoned leaves are almost evergreen. I have a vivid memory of a wooded hill-side in Carinthia carpeted with thousands of this little Cyclamen interspersed with deep, sapphire-blue sprays of Willow Gentian. The brilliant *Cyclamen coum* and *C. vernum* are charming miniatures for the rock garden, flowering from Christmas to March and the inter-marriage of these two species has given us *C.* × *Atkinsii* with rather larger flowers in pale rose or white. *C. Rohlfsianum* is a fragrant, deep crimson species from N. Africa, rather scarce.

For the past two or three weeks our Kent and Sussex woods have been carpeted with countless thousands of Wood Anemones. *Anemone nemorosa* is not, except for the purposes of this lecture, a bulb or even a tuber. It is a slender, angular rootstock. But I cannot exclude from these notes two most beautiful forms—'Robinsoniana' with large and

lovely flowers of pale lavender, wide-petalled with a central boss of golden anthers, and 'Royal Blue,' the richest, deepest, clear sky-blue. Replace our native white wilding with these. They are just as easily grown in any moist or woodland soil and what beauties they are. *A. apennina* and *A. blanda* have tuberous rhizomes and like a warm, well-drained soil in partial shade, where they will flower profusely in March. Both increase rapidly by self-sown seedlings—a welcome habit as they could never be termed invasive nuisances. Those who have seen the great carpets of the deep blue *A. blanda Ingramii* in COLONEL STERN'S garden at Highdown would hardly believe that these wide stretches all came from six little rhizomes planted less than thirty years ago. There are white and rose-coloured forms of both *A. apennina* and *A. blanda*, but they are inferior to the blues.

Spring's dominant colour scheme is yellow, white and green but many of the little bulbs furnish us with a wealth of blues in many tones and shades and these can be applied to the spring picture with a lavish brush. There are, for instance, the Scillas, which contribute a wide range of blues and lavenders, as well as pale pink, rose and white. We all know the early *Scilla bifolia* and *S. sibirica*, of which the best form is var. *atrocoerulea*, commonly known as 'Spring Beauty,' one of the finest of all pure blue flowers. Less well known, however, is *S. Tubergeniana*, a very, very good plant with many-flowered 5-inch spikes of palest delicate china-blue flowers, almost milk-white, with a darker turquoise stripe down the centre of each petal. *S. amethystina* is another newish introduction from Dalmatia with large, closely packed heads of rich, clear blue, bell-shaped flowers in late May. The larger forms of Scilla, of the Bluebell type, come rather beyond the scope of this lecture so I will not mention them other than to comment that the newer forms of *S. campanulata* are all first-class garden plants. I recommend them to you all wherever your garden is.

Chionodoxa is closely related to Scilla. These bloom very early, very soon after the Snowdrops and like the Snowdrops they will flourish in odd, shady, difficult corners, as well as fully in the open. They will thrive and increase when planted in grass if it is not too coarse and they are charming in the rock garden. *Chionodoxa Luciliae* and *C. sardensis* are well known for their vivid blue but must be seen in a dense mass to get their full beauty. There are good pink and white forms of *C. Luciliae*, the best and largest of which is 'Pink Giant,' much taller than the type. *C. gigantea* is, I think, the most charming of all, with large, upstanding, soft lilac-blue flowers. There is a very pretty, snow-white form of this, too, not often seen. This spring I have had in flower a form received as *C. gigantea grandiflora*, which is very distinct, not larger than the type but with much broader petals and considerably brighter and richer in colour.

Two other closely related groups of blue-flowered bulbs are Hyacinthus and Muscari, the Grape Hyacinths. Make special note of *Muscari Tubergenianum*, a very free-flowering species from Persia, of

recent introduction. It grows 8 inches high, with a close-packed head of flowers, the unopened buds at the top of the spike being light turquoise-blue, opening in the lower half to deep sky-blue. These beautifully contrasting shades have earned it the name of the 'Oxford and Cambridge' Muscari. It is a first-rate garden plant. *M. armeniacum*, the largest and boldest of the true Grape Hyacinths, with deep, cobalt-blue flowers, has a pretty garden form named 'Cantab,' much paler in colour, shorter and later. Very distinct is the Feather Hyacinth, *Muscari comosum monstrosum*, which produces in late May large, feathery, plume-like heads of soft violet-blue. It has been grown in English gardens for well over 300 years yet I have often heard it admired as something new and strange. *Hyacinthus amethystinus* is a most delightful little bulb, very graceful, with close, conical heads of frilled, light blue bells. The white form, too, is good.

The three largest and most important families of dwarf spring-flowering bulbs are undoubtedly Crocus, Narcissus and Tulipa. Crocus, of course, includes many fine autumn and winter-flowering species and the genus as a whole cannot be more than just touched on in the course of a short lecture. Of the eighty or so known species there are easily available at least thirty, ignoring the many botanical forms and seedling varieties which more than double this number, so that Crocuses may really be had in flower from September to April without a break. They are extremely easy to grow and I cannot think of anything comparable which will give you more flowers per bulb. Seek out a good list and make your own selection, then plant them in as wide a variety as you can afford on the rock garden, in short grass, at the foot of shrubs, at the edges of borders. Their requirements are simply a sunny exposure and well-drained, gritty soil. You must include, for the autumn, *C. speciosus* in shades from white to deep violet-blue (Fig. 64), *zonatus*, *ochroleucus*, *pulchellus* and *longiflorus*; for the winter, *Imperati*, *laevigatus*, *biflorus Weldeni*, *ancyrensis*; for early spring, *chrysanthus*, particularly the forms 'E. A. Bowles,' 'Moonlight,' and 'Warley White,' *etruscus*, *susianus minor*, *Sieberi*, *Tomasinianus*, *aureus* and *versicolor picturatus*. One species follows another to provide a sequence of flowers from October, right through the dark days, till March, when the large, and by comparison, gross Dutch Crocuses appear. What family of bulbs or, indeed, of any other plants could give us more? Make full use of what they offer and plant them as lavishly as you may wherever you walk round the garden, where you approach the house, where you can glimpse them as you stand at the kitchen window, or sit to pay your Income Tax.

The miniature Daffodils are more particularly subjects for the rock garden: indeed, the very small species are hardly suited for growing anywhere else. All are very hardy and, in nature, are found in mountains, alpine pastures and cool pine woods, a great number being natives of Spain, Portugal, S. France, and N.W. Africa. Hybrids between the species are very easily raised and have resulted in some very attractive, dainty little flowers which we all have now become accustomed to seeing

well exhibited at our Shows here every spring. A good point about these little Daffodils is that they reach flowering size within three years of seed sowing, which is more than one can say for the large-flowered Daffodils. There are others better qualified than I, and less bewildered, to discuss these tiny hybrids, but of the species I would always find a place on the rock garden for the 'Angel's Tears Daffodil,' *N. triandrus*; for that minute Trumpet Daffodil, *N. asturiensis* (*minimus*) and the rather larger *N. nanus*; the 'Hoop Petticoat Daffodil,' *N. bulbocodium*, and its lovely sulphur-coloured variety *citrinus*, and the still lovelier, though scarce, variety *monophyllus* with snow-white flowers: also *N. canaliculatus*, a miniature white-and-gold polyanthus Narcissus with a ravishing scent. An exquisite trio of pygmy Jonquils are *N. juncifolius*, *rupicola*, and the pure white *Watieri*—none of them over 4 inches high. As a general prescription for these small species a peaty soil, cool and moist, is the best. *N. triandrus* and its varieties thrive vigorously in almost pure peat. *N. cyclamineus*, of course, should be included in the rock-garden collection, but it is a species par excellence for broad plantings in woodland or short grass wherever it is very damp. It is wonderfully naturalized at Wisley in such conditions. In its native home in Portugal it shows a strong partiality for wet, marshy locations. High in the list of bulbs for naturalizing is also our own wild Daffodil, *N. Pseudo-Narcissus* and the plant commonly grown under the name *N. lobularis* which, incidentally, is the earliest Daffodil to bloom. In any border for small plants *N. Jonquilla* should find a home. Less than a foot high, it has the true unspoilt charm that the larger hybrid Jonquils lack. Its beautiful natural double form, known as 'Queen Anne's Jonquil' should also be planted if only for its intoxicatingly delicious scent. 'Queen Anne's Double Daffodil,' *N. eystettensis* (syn. *capax plenus*), is a very choice and rather scarce little plant of obscure origin with beautiful double creamy-yellow flowers formed like a six-pointed star. *N. Johnstonii* is a natural hybrid which occurs in the Pyrenees with delicate, pale lemon-yellow trumpet flowers. Collectors send us stock of so-called *Johnstonii* every year, almost invariably spurious, but efforts must be relentlessly maintained to procure the true stock as it is a lovely plant. Two garden hybrids are worthy of special note among the smaller bulbs: 'W. P. Milner,' a very graceful little Trumpet Daffodil with small, drooping, sulphur-coloured flowers, 8 inches high, and 'Hawera,' a lemon-yellow Triandrus Hybrid.

As for the Tulips, here we have a gamut of brilliance among the species and their varieties. Many of them, though of small stature, have flowers enormous enough to disqualify them for this lecture. The real dwarfs, however, provide great variety both in form and in colour and these alone could supply material for a lengthy dissertation. Though in general they are easy to grow, two rules should be followed. The soil must be well-drained and should contain lime. The foliage should be encouraged by good cultivation to develop and grow luxuriantly and protected against damage until it dies away naturally. This is important

with all bulbs but particularly so with Tulips. Do not plant the bulbs before November. The earliest species to flower is *Tulipa biflora*, with several small, starry, white, gold and green flowers on each stem, but perhaps too insignificant to place anywhere else than on a sunny ledge in the rock garden. Others for the rock garden are *T. Celsiana* (syn. *T. persica*) which opens its flowers to form flat, sweet-scented, yellow stars on 5-inch stems in May; *T. linifolia*, with the most intense, sealing-wax scarlet flower of perfect shape and its near-albino form *T. Batalinii*, a lovely soft yellow. *T. Maximowiczii* is similar to *T. linifolia* except in its foliage. *T. saxatilis* is a 12-inch beauty from Crete with flat, cup-shaped pale lilac flowers with large yellow bases. It is a little tricky to induce to flower, being stoloniferous and addicted to wandering underground. Either lift the bulbs annually, ripen them well and replant in rich soil or do the reverse by leaving them undisturbed in extremely stony soil in a confined pocket. Either method carries a modicum of success. *T. Clusiana* is the most graceful of all Tulips, but, unfortunately, it does not flower any too freely in this country, though a good display can be assured at least the first season after planting by procuring bulbs which have been grown and well ripened in the south of France where they are grown very extensively for cutting (Fig. 65). It should be planted deeply in well-drained soil in a warm sheltered position and should be left undisturbed. Very closely allied to *T. Clusiana*, but half the size, is the Himalayan *T. stellata chrysantha*, brilliant yellow with a rose-red back. The bulbs, even those of flowering size, are very small: an excellent plant for the rock garden. A very closely related quartette of very dwarf species from Asia Minor are *T. Aucheriana*, *humilis*, *pulchella* and *violacea*, all 3 to 4 inches high with cup-like flowers opening wide and star-like in the sunshine—the first named in rose-pink, the others in tones of lilac to petunia-purple. They flower very early and if planted in the rock garden—scree is best—it is worth while protecting the flowers with small panes of glass. All are admirable subjects for the alpine house. *T. Kaufmanniana*, the so-called "Water-lily Tulip" from Turkestan, is a very variable species and the various forms have been intercrossed and also crossed with *T. Greigii* to produce an attractive group of very early-flowering Tulips of great garden value. Among the natural forms and garden seedlings the varieties 'aurea,' 'coccinea,' 'Brilliant' and 'Gaiety' are dwarf and retain the unspoiled charm of the species while the hybrids all have an extremely well-bred air and several of them have obtained high awards following Wisley trials. The *Kaufmanniana* × *Greigii* varieties have mostly been named after musicians and are known collectively as *T.* × *harlemensis*. The variety 'Josef Kafka' is dwarf and possibly the best of all but the majority are rather too large to be considered among "small bulbs."

One of the most popular of all small bulbs is *Iris reticulata*, with its deep violet flowers in February and March. There are several varieties and seedling forms ranging from pale blue to reddish-purple but none of them, to my mind, has the charm of the type. In the same section

come *I. Bakeriana*, a tiny flower of lavender, indigo and white which opens three weeks before *I. reticulata*, the bright yellow *I. Danfordiae* and the sky-blue *I. histrioides* (Fig. 67). All are very hardy and remarkably weatherproof, increasing freely given a sunny position and light, gritty soil.

Comparatively few of the many known species of Fritillaria are easily established in our British gardens though our native *F. Meleagris* ranks very high among bulbs for naturalizing. It thrives in most soils, in sun or light shade, in grassland and woodland. It seeds itself freely, a large proportion of the self-sown seedlings reverting to albino forms. *F. acmopetala* from Syria is another easily grown species growing about 15 inches high. The bronzed green bells, shining yellow within, are handsome enough in a suspiciously masculine manner. *F. verticillata* is a vigorous grower of 18 inches or so with greenish white flowers speckled with purple.

Many of the Garlics, a very large family, have very attractive flowers in early summer; furthermore, they flourish even in a poor soil. *Allium narcissiflorum* is one of the most attractive, about 9 inches high with loose heads of deep pink bells. *A. Murrayanum* is another good pink species not widely enough known. *A. caeruleum* has rounded heads of deep sky-blue flowers on slender, 18-inch stems. *A. sphaerocephalum* has ruby-crimson flower-heads, also 1½ to 2 feet high, while *A. neapolitanum* bears its white flowers in loose, graceful scapes. *A. Ostrowskyanum* and *A. Farreri* are good rock-garden plants. Many are unusual and decorative as cut flowers and I like to use them for this purpose in association with the Brodiaeas, another genus strangely neglected in our gardens. These are natives of W. America, hardy in this country. *B. laxa* with wide umbels of deep purple-blue flowers, the white *B. peduncularis*, the yellow, black-veined *B. ixioides* and the lilac *B. Bridgesii* always appeal to those who like uncommon flowers. All four mentioned are easy enough in well-drained soil and full sun.

To conclude with three autumn flowerers: *Lapeyrousia* (*Anomotheca*) *cruenta* is an exceptionally pretty little plant for the rock garden or sunny border in light, warm soil where it will produce 6-inch Montbretia-like sprays of carmine-scarlet, purple-blotched flowers in August and September. *Merendera Bulbocodium*, like a miniature Colchicum, produces leafless stems 3 to 4 inches high bearing starry lilac flowers in late September. Finally *Sternbergia lutea*, said to be the scriptural Lily of the Field, is a first-class hardy bulb producing in late autumn brilliant yellow flowers like large Crocuses with long-persistent tufts of bright deep green leaves.

HORTICULTURE AS A THERAPY

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THE housewife who has propagated a Begonia or an African Violet from a single leaf, who has anxiously watched the plant take shape, and who has cherished the opening of each new petal, may be unaware of any influence on her daily life. The man who grows a shapely Apple tree in the backyard, who watches the buds break in the spring, who smells the flowers, and feels and enjoys the fruit, may not appreciate that he is richer than his neighbour, who has never possessed a tree for a friend. And the person who is confined to his bed for many months and who has become despondent and unwilling to help himself, may not realize that it was the interest demanded by a rapidly growing plant at the bedside that provided his hold on life. Yet, in a noisy, busy world, where deadlines must be met and prompt schedules kept, and where great pressure is a constant companion, horticulture can function as a safety valve for society. For those who have long known the fascination of growing plants and have experienced the complete command which they exert over mental and physical powers, it is difficult to understand why an organized programme of horticulture as a therapy is necessary.

Those who understand these values in plants can take full advantage of them, but those who do not know and who desire to know must be shown by others. This is the reason for an organized approach to the development of horticulture as a therapy. Horticultural therapy is not thought of as a new therapy. It is merely a tool to supplement the already existing forms of therapy.

Horticulture has a broad appeal. It may be practised in the home, in the garden, in hospitals, and in convalescent homes. It has great elasticity. It may be practised extensively and expensively or intensively and with modest means. Probably its greatest value as a therapy is in the form of preventive medicine. Because of the wonder and mystery that surround the germination of seeds and the growth of plants, there is special intrigue for children. With interests captured at an early age, appreciation is established which may contribute substantially to the weighing of true values and satisfaction of life in later years.

The shaping of a programme in horticultural therapy and the mechanics of its operation will depend upon facilities and the needs of the patient, and must be in accordance with the prescribed medical programme. The suggestions which follow do not constitute an exhaustive study of such a programme, but they have been found helpful and suggestive to others.

PLANT GROWTH

Seed Germination—Many patients have found much interest in observing the germination of seeds and the development of seedlings. Half fill a glass tumbler with any rapidly-growing large flower or vegetable seed. Fill the rest of the tumbler with paper towelling, forced into the tumbler until it is quite tight. Fill the tumbler with lukewarm water and let stand at room temperature. Observe the swelling of the seeds and the pressure exerted on the paper towelling as it is forced up and above the top of the tumbler.

As soon as the seeds have germinated and the primary root (radicle) and the primary shoot (plumule) appear, the seeds may be transferred to damp paper towelling and kept in a saucer for further observation of growth of the seedling. A hand lens will be found useful. Some of the seeds may be transferred to a tumbler filled with moist vermiculite (expanded mica), and so placed in the tumbler that they may be observed through the glass.

Some seeds, such as Okra, Sweet Clover and Alfalfa, may be very slow to germinate because water does not easily penetrate the hard seed coat. Such seed may be exposed to warm, moist conditions for a week, and then touched with the point of a hot needle so that the seed coat is broken and the water can penetrate.

Propagation—Propagation of some plants from leaf and stem cuttings is very easily done. Insert the cuttings through holes made in a cardboard which fits the top of a glass tumbler filled with water. Let the tips of the stems protrude about half an inch into the water in the tumbler. In this way roots can be produced on African Violet, Geranium and some Begonia leaves with little difficulty. Similarly, roots can be grown on stems of Willow, Coleus, Geranium and Tomato. Willow will root more satisfactorily in the later winter and early spring months. The other plants will root at almost any time.

Many modifications of this rooting practice may be made to suit the conditions and the accessories available. A propagation chamber may be made in a small plastic- or glass-covered container (such as used for storing butter and food "left overs"). These containers are inexpensive, light weight, tight, and convenient to handle. Use at least 1½ inch of damp vermiculite in the bottom of the container. Leaves are also easily rooted in a ball of damp Sphagnum Moss that has been enclosed in a piece of plastic film. It is important to make sure that the film is of a type which is impervious to moisture, yet through which the air will pass.

Bulb Culture—Bulbs of Narcissus, Hyacinth and Crocus will grow quite rapidly and produce flowers in a shallow container if they are steadied in place with small stones or pebbles. The stones should cover the lower two-thirds of the bulbs, and water should be kept at this level at all times. During the first two weeks of growth, roots will develop most rapidly if the bulbs are kept in a dark room where the temperature is about 60° F. After this period they should be exposed to as much sunlight as is available, and kept at room temperature. In all of the

procedures for plant growth where light is necessary, an electric light bulb may substitute or supplement sunlight from a window.

PLANT IDENTIFICATION

The identification of plants by both common and scientific names is not difficult and appeals to many patients who have considerable time on their hands. In fact, some patients are much more interested in this type of horticulture than in the actual growing of the plant.

It is best to have a collection of properly labelled living plants. Common house plants are suitable, and frequently garden clubs and other service organizations are very happy to help build up the collection. Cut flowers are also useful. If it is not possible to obtain a collection of foliage plants or of fresh flowers, they can be preserved in a mixture of 50 ml. of 95 per cent. alcohol, 50 ml. of formaldehyde and 5 ml. of acetic acid. In fact, there is no limit to the range of interesting, seasonal material available throughout the year from greenhouse, garden, field, wood and stream.

Similarities and family associations are a logical step in identification. Close examination of Lily, Tulip and Daffodil flowers, for example, shows the relationship of these plants to one another in number and arrangement of flower parts. Likewise, flower relationships can be shown between a Rose and an Apple Blossom, Cherry and Peach flowers, or a Tomato and a Potato blossom. With an elementary botany book many patients are able to study the material for themselves and gain great satisfaction from their own accomplishments.

The study of key plants and the keying of plants is still another step. Keys are available for almost every geographical location and group of plants. Some deal solely with dormant woody plant material, others with leaves, and so on. The field is very attractive and the limits are never reached, or the possibilities fully explored.

Herbs for the Blind—Herbs are very interesting to blind patients and offer many possibilities. An ideal arrangement is an accessible outdoor herb garden planted on a sloping terrain so that the plants are about waist high. The patients can then follow along a hand rail with one hand and reach over a grass slope to feel and smell the foliage of each plant. Labelling should, of course, be in Braille (Fig. 68). If it is not possible to have a collection of herbs out of doors in a garden, they may be grown as pot plants and used inside in a similar manner.

FLOWER ARRANGEMENT

Cut Flowers—Patients with an artistic touch find flower arrangement a useful attraction. Not infrequently, large flower arrangements are sent to hospitals and must be dismantled and rearranged for hospital use. Among the occupational therapists, there is frequently one person who can assist with this work and at the same time instruct ambulatory patients.

A variety of vases and flower containers is necessary, and certain

other equipment is essential, such as chicken wire, "styrafoam," and various devices for holding the flowers in position. Excellent books are available on the subject of flower arrangement, which the patient can use as his desires dictate.

Button Gardens—An adaptation of flower arrangement is the button garden. For this, large buttons up to 2 inches in diameter are used. Small specimens of dried flowers are arranged and affixed to the buttons with a quick-drying transparent cement. This practice requires considerable skill and manual dexterity as well as an adequate collection of dried flowers from which to make selections.

LECTURES AND DEMONSTRATIONS

Books, moving pictures, lectures, and demonstrations on the many phases of horticultural activity must not be overlooked. Some of the best books for patients are those on gardening and elementary horticulture. Excellent motion pictures are available, some with time-lapse photography which show the slow development of plant parts. These are intriguing and valuable in supplementing a programme dealing with plant growth. It may be advisable to select a lecturer from a local garden club or horticultural society, a local florist, or some amateur enthusiast who has experienced a great satisfaction from his horticultural activity. In many places a patient has been able to help others by preparing a talk or demonstration on some particular phase in which he has become accomplished.

OUTDOOR GARDENING

All types of garden work can be adapted to the needs of the physically and mentally handicapped. The opportunities are so apparent that they need hardly be recorded here. One point should be emphasized, however, namely, that a large area is not necessary. One may garden as little or as much as he desires, in an elementary or in an advanced manner, and for short periods of a few days or for one or more seasons. Competitive flower and vegetable gardens have been used to good advantage at mental hospitals for developing a feeling of individual accomplishment. Hoeing and raking are good for the strengthening of muscles in disabled arms. A small, easily controlled, self-propelled lawn mower will give exercise to the legs, and at the same time will provide motivation and co-ordination. Electric mowers are especially good (Fig. 69).

Training in accurate labelling of plants and in immaculate maintenance of lawns, flower borders and edges is ideal. The *opportunity* to produce one's own fruit, flower, or vegetable in an attempt to reach perfection in the science and art of growing is of immense value.

GREENHOUSE GARDENING

Greenhouse gardening requires elaborate accommodations and is, therefore, not always feasible. Where greenhouse facilities are available, however, greenhouse gardening has been found to be extremely

useful for certain patients. During the winter months, the greenhouse becomes a substitute or supplement to garden work.

Indoor work is different to outdoor work and may be most useful for patients who must be kept in a warm environment. It must be remembered that most greenhouses are very damp—a disadvantage for some people. Such operations as seeding, potting, transplanting, watering, cutting and measuring of flower plants may be carried on. The growing of food crops, such as Lettuce, Radishes, Tomatoes, Cucumbers and other vegetables is often more interesting to men than is the production of flowers. A greenhouse, even a small one, will be found to aid materially in any of the programmes undertaken, including plant identification, flower arrangement and identification of herbs by the blind. In any event, a greenhouse is always a place of brightness, cheerfulness and inspiration.

PLANT BREEDING

Plant breeding is useful for the more accomplished horticultural patients. It usually develops as a secondary practice. For example, after a person has propagated and grown very fine African Violets, he may be inclined to turn to hybridizing the crop. By completely removing the stamens from an undeveloped flower and then transferring the pollen from another flower, it is possible to produce seed which is the offspring of a combination of these two plants. By crossing a white African Violet with a blue form, an interesting and perhaps worthwhile new variety may be produced. Because of the large size of the flower parts, Lilies make very good material with which to work. Yet, almost any fruit, flower, or vegetable can be used. Plant breeding has a fascination and motivation which is well recognized. It should make an ideal programme where a long sustained interest is desired. Properly led, it could become an excellent group or institutional programme.

PLANT NUTRITION

Adequate light, such as that found in a greenhouse, or a bright, sunny window, is essential for satisfactory experimental work in plant nutrition. Perhaps the simplest experiment to show the importance of a good supply of nutrients is to germinate and grow Bean plants in clay pots, using pure beach sand for one pot, and good rich garden loam for the other. In about two weeks the plants growing in the garden soil will have made much better growth.

This experiment can be made more complex and much more interesting by applying varying amounts of pure chemical nutrients to plants growing in beach sand. Almost any plant which grows vigorously may be used. One nutrient, such as nitrogen, may be supplied in excess in order to demonstrate the effect on the increase or decrease of some other nutrient, such as potassium or phosphorus. One of the essential nutrients, such as potassium, may be omitted so that symptoms of potassium deficiency are shown. Excesses of other materials, such as

CHINESE PAINTINGS RECENTLY PURCHASED BY THE ROYAL HORTICULTURAL SOCIETY

FIG. 61—A drawing of Chrysanthemums (See p. 213)

CHINESE PAINTINGS

FIG. 62—A dark purple double tree Paeony (See p. 211)

CHINESE PAINTINGS

FIG. 63—Drawing of a white Camellia (See p. 212)

SMALL HARDY BULBS

FIG. 64—*Crocus speciosus* at Myddelton House (See p. 198)

Photo, J. E. Downward

Photo, R. Malby

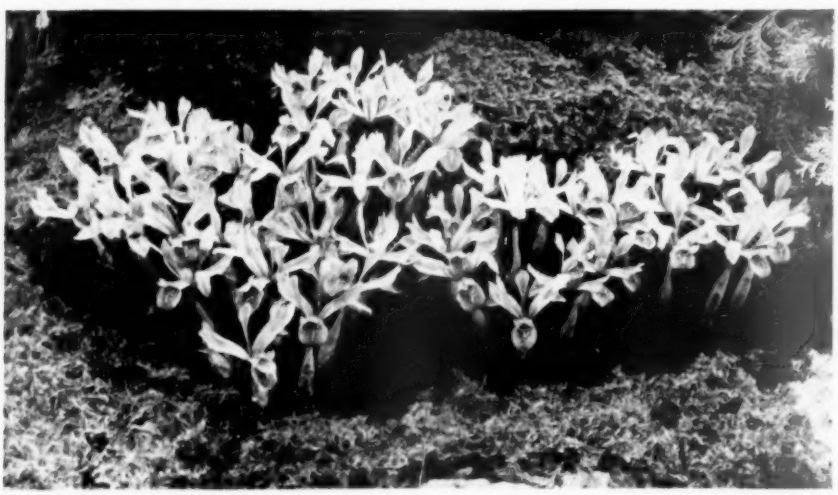
SMALL HARDY BULBS

FIG. 65—*Tulipa Clusiana* (See p. 200)

Photo, D. E. Green

THE AZALEA WHITE FLY

FIG. 66—Leaves of *Rhododendron mucronatum* attacked by the Azalea White Fly
(*a*) Upper surface showing deposit of sooty moulds
(*b*) Lower surface showing pupal and larval stages (See p. 219)



Photo, J. E. Downward

SMALL HARDY BULBS

FIG. 67—*Iris histrioides*. A group in a recent exhibit

HORTICULTURE AS A THERAPY

FIG. 68—Blind students studying herbs by feeling and smelling them. The labels are in Braille (See p. 204)

FIG. 69—A partially paralysed patient mowing a lawn as a therapeutic occupation (See p. 205)

FIG. 70—Occupational therapist assisting patient to make a flower arrangement. He can use his arm only with the aid of a sling (See p. 207)

FIG. 71—Patient pollinating African Violets that she has grown as a therapeutic treatment for her nervous condition (See p. 207)

boron, can be used to demonstrate toxicities. There are excellent books available containing colour plates of various nutrient deficiencies shown by different plants, and which may be used as guides to such studies.

Still further, plants can be grown in nutrient solution in tanks (hydroponics) and satisfactory crops produced. This, however, is a more advanced technique requiring special equipment and special skill. Here, too, books are available which treat the subject adequately.

ADAPT THE HORTICULTURAL PRACTICE TO THE PATIENT'S NEED

It is important to plan the project to suit the probable length or period of illness.

Patients who are confined to bed are limited in their scope of horticultural activity. A patient can easily hold one of the miniature gardens growing in a plastic box. This, or any other type of plant or flower arrangement, is very satisfactory for a patient who is confined to the bed. Many of the experiments mentioned under plant growth, or plant identification, also can be adapted for use of patients who are in bed. Experiments under the heading of instruction as well as most of the growth regulator and physiological process demonstrations have been shown to be very helpful for patients who are confined to a bed for a long period of time. Frequently in overcrowded hospitals where the turnover of patients is rapid, these experiments interfere with the essential routine of the hospital and should be avoided.

The patient in Fig. 70 is working with flower arrangements as a special type of exercise for an injured arm and hand, with his injured arm held in a sling. He is also able to participate in routine work in the garden or in the greenhouse. It is advisable to adapt the activity to emphasize the exercise that is most helpful for curative purposes. Ambulatory patients, who have been physically or mentally handicapped, may engage in flower arrangement, gardening, or greenhouse work. They can become sufficiently advanced to engage in plant breeding and experimental work in plant nutrition.

The lady in Fig. 71 is pollinating African Violets as a therapeutic occupation in the cure of a nervous condition developed through dietary restrictions. This particular patient has made a complete recovery, and has been given an entirely new outlook on life.

The aptitude and interest of the partially or totally blind is outstanding. In Fig. 68, the blind boy is being taught to propagate herbs and to know them by their odour—and the texture of their foliage. Some of the more highly scented flowers are useful for work with blind patients.

While some of the experiments are more readily adapted for use as preventive medicine, there are really none of those which have been mentioned which cannot be adapted for this purpose. Much of the choice of activity will depend upon the availability of facilities and materials, as well as the interest and aptitude of the patient.

Usually the most important feature is to inspire an interest in horticulture on the part of the patient. Not everyone will respond to this treatment, but in many instances it has been found to be a helpful supplement to other types of occupational therapy.

Most of the experiments in this outline have been designed for very simple operation. It is a mistake, however, to consider that all the patients will be interested in simple experiments. Especially is this true for mental cases and those recovering from infantile paralysis. Some patients are already well grounded in simple horticultural practices and for them more elaborate experiments need to be undertaken. These patients can serve to help the directors of programmes of horticultural therapy.

It has been found that great disappointment may follow if any experiment fails to demonstrate the function for what it is designed. Consequently, it is advisable to try all experiments before they are exposed to the patients for observation. After an experiment has been performed once or twice, it may seem advisable to alter it somewhat to suit the environment and the patient for whom it is to be conducted. Success with one type of experiment usually leads to great desire to continue and do more and different experiments.

The Department of Horticulture at Michigan State College is interested in answering any questions about Horticultural Therapy, as well as supplying supplementary information for adaptation of a programme for specific needs.

NOTES FROM FELLOWS

Agapanthus caulescens Spreng.

THIS plant was raised by SPRENGER in his nursery at Naples from seed sent him from the Transvaal in the late nineties of last century. He described and named it in 1901; and there exists in *Gartenflora* a coloured plate of rather inferior quality which illustrates a plant which cannot be identified with any of the species at present known to grow wild in the Union of South Africa, to which the genus Agapanthus is confined in its natural state. There are indications that SPRENGER's plant may not have been as he thought a species, but was in reality a hybrid. In order to verify this point, it would be of great assistance if any living material of the plant distributed by SPRENGER under this name in the early years of the present century could be examined. It may be that some stocks still survive in gardens in this country, or on the Riviera, of which it is known that they came originally from SPRENGER's nursery, and if any fellows should know of any such stocks I would be very grateful for information concerning them.

Headbourne Worthy Grange, L. PALMER
Winchester, Hants.

CHINESE FLOWER PAINTINGS

An important purchase by The Royal Horticultural Society

Patrick M. Synge

RECENTLY a London bookseller reported to the Society that three large volumes of flower paintings had been offered to him and that many of these bore the letters H.S. in the corner. On investigation it became apparent that these drawings formed an important part of the Reeves Collection, the location of which appeared to have been lost, and the Council authorized their purchase for the Lindley Library. These were paintings commissioned by the Horticultural Society of London, (the original name of the Society) during the early years of the nineteenth century when China, apart from a few treaty ports, was still a closed country to Europeans and little was known about its flora or about the many fine plants cultivated in the gardens of its temples and merchants. Some of these plants, however, had been seen by traders in the treaty ports and thus stories about them had reached this country. JOHN LINDLEY, then assistant secretary of the Horticultural Society, arranged with JOHN REEVES, an English merchant in Canton who was interested in flowers, to have a series of paintings made under his direction. REEVES is known to have taken up his post in China in 1812 and to have retired in 1831 and during these years several hundred drawings were completed for the Society. These were made by Chinese artists, but in a more western style than was usual for them and were intended to have been as realistic appreciations of the flowers as could be obtained although in many, especially the Paeonies, the eastern influence is also very apparent. A contemporary tribute to their accuracy was paid in 1826 by JOSEPH SABINE, F.R.S., then Secretary of the Society, who, writing in the *Transactions of the Horticultural Society* about the Paeony drawings from this collection, said, "The drawings executed in China, for the Horticultural Society, under the direction of MR. REEVES are to be depended on for their accuracy."

REEVES must have been a most interesting personality and E. H. M. COX in his book on "Plant hunting in China" records that he wielded an extraordinary influence on horticulture, as great in the British Isles as in Canton and Macao. He is known to have corresponded regularly with many of the leading English biologists of that time, including SIR JOSEPH BANKS as well as LINDLEY and SABINE. He was most methodical and insisted that all plants should not be shipped until they had been established for several weeks in their pots and he succeeded in arousing the enthusiasm of the merchant captains for the task of caring for the plants during their long journey. In addition to the flower paintings he made a large collection of paintings of fish.

While many of the drawings merely represent single flowers, and a number are included on a single sheet, some represent whole sprays of a single plant and are beautiful both in execution and design.

The drawings are mostly on Whatman's drawing paper, presumably

sent out from this country and bearing watermarks between 1794 and 1826. These watermarks cannot of course be taken to represent the actual years in which the drawings were made, but they do give us an indication. Others are on Chinese rice paper, used, presumably, when the supply of English paper ran out. In the corner of each drawing is a little number and one may presume that these were intended for reference so that LINDLEY might send back requests for plants of those numbers in which he was particularly interested. There are no records unfortunately as to what plants were obtained in this way, but it is known that the Society, interested then as now in the importation of new plants, received about this time a number of plants from MR. REEVES. It was, however, no easy matter and special cases were constructed for the long journey round the Cape. Other plants recorded as having been imported about this period include Camellias, Indian Azaleas (mostly from China or Japan), Chinese Paeonies, Roses and Chrysanthemums, while, according to ANDREW MURRAY's Book of the R.H.S., the Society's Minute books show that a distribution of imported seeds took place in the spring of 1818. J. D. PARKS was sent to China to collect plants for the Society in 1823–4 following on the death of MR. JOHN POTTS their previous collector, and it is recorded that he also received much assistance from REEVES.

A few of the drawings have been named in LINDLEY's fine script while a number also bear names in Chinese characters. It is easy to imagine the thrill and the excitement with which each new parcel of drawings must have been unpacked and examined. A number represented new species and a few were even described from these drawings. Among them were found drawings of such important plants as *Primula sinensis*, and it was as a result of this drawing that the Primula was introduced a few years later by MR. POTTS. It is probable also that these drawings would have been consulted in framing the instructions for ROBERT FORTUNE when he left for China in 1843 to collect plants for the Society. Unfortunately the Society fell into financial difficulties in 1858 and the whole of its Library including these volumes was then sold. It was to prevent any such catastrophe ever occurring again that the Lindley Library is protected by the formation of a trust. It is not known who purchased these volumes at the sale or through whose hands they may have passed until five volumes of these drawings were purchased by REGINALD CORY in 1908. He subsequently bequeathed them to the Society in 1936 as part of the largest and most valuable single bequest of books that it has ever received. These contained 628 sheets of drawings. The three folio albums recently purchased are slightly larger in size (25½ in. × 18 in.) than the CORY volumes and contain 127 mounted sheets of paintings. They are devoted almost entirely to the three genera Camellia, Chrysanthemum and Paeony and are generally in good condition, although in a few cases some of the white paint used has oxidized and become black. These are the only parts of the collection arranged in separate genera and MRS. CARDEW has suggested that probably about

1837 or a little later LINDLEY began the systematic arrangement of the collection by genera. The date 1837 is given by the watermark on the paper on which a number of the Chinese drawings are mounted. All the Camellia drawings with only one exception are included in these three volumes, but only part of the Paeony drawings are there, the remainder being in the CORY volumes. It may be surmised that when LINDLEY became Vice-Secretary of the Society in 1840, he had not time to finish the work and so had the remainder of the paintings bound up haphazardly in the five CORY volumes to protect them from wear and tear, and I have been informed that the character of the binding agrees approximately with this date.

PAEONIES

The thirteen drawings of Paeonies are among the finest of the whole collection and are undoubtedly the equal in artistic qualities and delineation of characters of the two Paeony drawings which now hang in the Committee Room of Floral Committee B and are copies of drawings made for the East India Company, possibly even by the same artist.

All the drawings except one sheet represent tree Paeonies and they include a much wider range of colour than we now appear to have in cultivation in this country, particularly among the deep purples of which No. 16/2 (Fig. 62) is a particularly fine example with an attractive fimbriated edge to the petal. Another drawing shows a most brilliant buttercup-yellow full double Moutan Paeony, while yet another shows a double variety with copper-coloured flowers.

The first Paeony plate in the collection has been named by LINDLEY as the var. *papaveracea* and probably represents a form very close to the wild Moutan (*P. suffruticosa*). This may also have been the same as the plant introduced to SIR ABRAHAM HUME'S garden at Wormley Bury in 1802, a plant which subsequently attained great size being recorded in 1835 as a bush 14 feet in diameter with 320 flowers. Wormley Bury is now the home of MAJOR A. PAM who still has a smaller plant, presumed to be an offshoot of the original plant.

The original plant is the one figured in ANDREW'S *Botanists Depository* as *P. papaveracea* in 1807, but ANDREW'S plate shows a larger flower than that in the Chinese drawing. This may give us some indication as to the scale of the Chinese drawings which is nowhere represented in them and suggests that the flower represented, although $5\frac{1}{4}$ inches in diameter, may have been reduced in size. ANDREW'S plate shows a flower $9\frac{1}{2}$ inches in diameter.

COL. F. C. STERN in his study of the genus tells us that the first plant of *P. suffruticosa* was introduced by SIR JOSEPH BANKS in 1787. The flower shown in this Chinese drawing does not, however, appear to be so fine or so large as the one growing at Highdown from DR. ROCK'S seed, and illustrated in our JOURNAL for July 1949 (Fig. 104), although it must be closely allied to it, having the same dark blotch at the base of the petals.

On one of the plates showing a very lovely semi-double deep

crimson-maroon variety of Paeony is also a pale creamy-yellow flowered shrub, somewhat reminiscent of a Drimys, but no species of this genus is known from China and I have not yet been able to identify this plant. There is an interesting account by JOSEPH SABINE of tree Paeonies in cultivation in this country in Vol. VI of the *Transactions of the Horticultural Society* for 1826, and this includes details of many of the recent introductions from China, but SABINE records that the Moutan Paeonies were only brought to Canton for sale in a dormant state and never established there, usually dying after flowering. Consequently it was difficult to keep them alive during the long hot journey home. Also some of the finer varieties were very much prized by the Chinese who were not willing to sell them to foreigners, while usually the officers of the East India Company would have gone to Macao before the Paeonies flowered and consequently had to buy the plants when they were dormant and when it was impossible to distinguish the varieties.

CAMELLIAS

The drawings of Camellias cover sixty-three sheets, and in many cases a number of varieties are represented on the same sheet. For the most part they are not, in my opinion, the equal in drawing of the Paeonies or Chrysanthemums and unfortunately there is no scale, but we may assume that a number of the varieties are reduced in size. Unfortunately in some cases the white paint has oxidized to a dark colour, thus destroying some of their beauty. Although the drawings seem clear enough, it is very difficult to identify with certainty more than a very few of the present-day varieties, although in some cases these drawings may well represent the first representations of them. The majority are obviously varieties of *Camellia japonica*, but among them are several which may well represent varieties of *C. reticulata* including the commonly grown *semi-plena*, while a small double white flowered one may be a form of *C. cuspidata* or of the Tea plant, *C. sinensis*.

Undoubtedly there are some varieties shown which we do not have in cultivation including one rather extraordinary semi-double striped variety labelled 'Fa Cha.' It is a white flower flushed crimson at the base of the petals and irregularly along the edge. The full, double imbricated varieties predominate and there is one like 'Mathotiana alba,' while another attractive semi-double white one is labelled 'The Eighteen Teachers.' It is curious that in practically all cases the artist has shown the petals of the imbricated varieties with a tendency to roll inwards at the edges, while in most of these cultivated in this country the petals show a tendency to roll back outwards when the flower is going slightly over. The small single white illustrated (Fig. 63) has the quality of orange blossom and to me is one of the most beautiful drawings in the collections. Unfortunately, I cannot name it, but the flower has some resemblance to that of 'Alba simplex.' No. 49 shows a flower like that of 'Alba grandiflora,' while No. 40 shows a red flower resembling 'Anemonaeflora' and labelled in LINDLEY'S writing, 'Red Warratah

Camellia.' Another very attractive plate shows a rather loose double white flower with a yellow-green flush at the base of each petal.

Altogether, the Camellia enthusiast cannot fail to be interested in the great variety of the flowers shown.

CHRYSANTHEMUMS

Fifty-one drawings of Chrysanthemums are included and some like the plate shown (Fig. 61) carry more than one variety. These vary considerably from small pompon types to larger incurved varieties and although not approaching the present-day varieties in size, many of them have a grace and charm which has in some respects been lost in later developments and among those drawings may well be found the early forerunners of our present varieties. Chrysanthemums have always been one of the favourite flowers of the Chinese and at the period of these drawings had obviously been multiplied into many varieties. An article by JOSEPH SABINE in the *Transactions of the Horticultural Society* for 1826 gives details of a number of new varieties introduced about that time and records that many had been brought from China by MR. PARKS in 1824 and two by REEVES himself when he returned in the same year. SABINE records among these a 'blush Ranunculus-flowered Chrysanthemum' which agreed so well with the Chinese drawing that he was able to name it. This drawing is among those recently purchased. In China he records that it was also called 'The Drunken Lady' on account of the rosy hue of its flowers and that it was an early flowering kind. Another fine one was the 'Golden Lotus-flowered Chrysanthemum' also introduced by PARKS in 1824 and SABINE reports that the name is "a translation of the original Chinese appellation, the correctness of which has been proved by comparison with a drawing made in China by the artist employed there for the Horticultural Society." This appears to have been the finest yellow Chrysanthemum of its time. Of another drawing SABINE writes: ". . . it appears as if the Chinese obtained a variety of coloured blossoms together by means of grafting several different kinds and those not sports from each other, are represented in the drawing as all branching off from one common stem." This may well have referred to the drawing reproduced and the plant may have been as SABINE surmised. Alternatively, a number of varieties may have been figured together on one plant to suit the artist's convenience. There was obviously a great interest in the culture of Chinese Chrysanthemums between 1820 and 1830. Other attractive names to be found under the drawings are 'White Crab's Claw,' 'Yellow Tyger's Claw,' 'Yellow Umbrella,' 'White Waves of Autumn,' 'Purple Pheasant's Tail,' 'Yellow Needle'—a beautiful variety with finely rolled and quill petals, 'Egg-yellow Globe'—a good deep golden incurved variety. One of the most unusual and attractive varieties (sheet No. 29), shows a white and deep pink flower with rather twisted petals of which the base colour is white and the edge and part of the reverse are deep pink. The Chinese name is translated as 'Yok Lou Chun' and it is quite unlike any Chrysanthemum that I have ever seen in this country.

TREE PEONIES

Louis Smirnow
(LONG ISLAND, U.S.A.)

THE tree Peony found its way into the gardens of the Chinese aristocracy hundreds of years ago. It was later brought into Japan and, about 150 years ago, Europe received it from the Orient.

The tree Peony is a shrubby counterpart of the familiar herbaceous perennial and is distinguished principally by its woody stems. The branches do not die back to the ground in winter as do the herbaceous types. It puts forth its buds in the autumn and thus develops somewhat faster in the spring. By the time it is several years old, it is capable of blooming in great profusion. Tree Peonies usually are taller than the herbaceous kinds and have larger flowers—which are produced two or three weeks earlier. The plant may grow to a height of 4 to 5 feet and may become 3 to 4 feet in diameter. Grafted varieties will occasionally exceed this size but seedlings have been known to grow larger. There is a large light purple in the gardens of DR. GURIN of Great Neck, Long Island, New York, which is 9 feet tall and 8 feet wide, but this is the exception.

A tree Peony is a striking plant and should be given a place of honour. So placed, a single specimen may become the focal point in an intimate garden. A group of them is spectacular and when backed by Lilacs, is unbelievably beautiful. Landscape architects have recently recognized in the tree Peony an excellent small shrub for their planning.

At the present time, three distinct groups of tree Peonies can be distinguished: the European, the Japanese and the Lutea hybrids. Though the European and the Japanese types are from the same ancestry (*Paeonia suffruticosa*), they are quite different in appearance. The European tree Peonies are usually very double and have broad foliage ; the Japanese types have single or semi-double blooms and the leaves are much finer and thinner than the European. Also, the Japanese tree Peonies usually have in their centres a beautiful cushion or circle of yellow stamens. The Lutea hybrids are the product of crossing *Paeonia lutea* with *P. suffruticosa*. These are difficult to propagate and are very rare.

The colours of both the European and the Japanese tree Peonies range from pure white through pale pink, rose, cherry, violet, salmon and cerise, to deepest red. The Japanese have a much broader colour range than the European types. Lutea hybrids display colours and shades all their own. Yellows ranging from clear tones to orange tints, vie with combinations of yellow and red for the viewer's attention.

Some of these are unsurpassed even by the Rose. In the Japanese tree Peonies, there are clear whites, pinks, salmons, reds, purples and maroons that cannot be described in words. Their Japanese names may come close to it. The refreshing daintiness of the semi-doubles and the airiness and sparkle of the full double blooms of any of the tree Peonies defy description.

Tree Peonies begin to flower in the New York area about May 15 to 20. The Lutea hybrids open latest, about May 20 or 30. Some varieties lend themselves to forcing but all are easy to grow in most parts of the country. They have been known to survive winter temperatures of twenty to thirty degrees below zero and will endure more neglect the year round than most plants. Though a tree Peony cannot suffer from neglect, a little attention produces better flowers and a more handsome shrub. Well drained soil and sunlight for the greater part of the day, are the major requirements. If the plants are set rather deeply into the ground, the production of new sprouts or shoots from the roots will be induced and a larger shrub will result. The tree Peonies need at least 4-foot spacing since the mature specimens are that high and as wide. Bone meal or a commercial fertilizer low in nitrogen but high in phosphoric acid and potash is the best to use. Bone meal is sufficient and no other fertilizers need be applied. The use of manure is advisable only when mixed with soil. Others have employed it to advantage when digging the hole. One-half spadeful of manure is placed at the bottom and then covered with soil. The danger comes when the manure is permitted to touch the stem of the plant. Often the stem will rot and the root will be affected. Since the plants are hardy, they need but little winter protection after the first year. Young plants, however, should be covered with leaves or some such mulching material. In severe winters, an occasional limb may be killed by extremely cold winds but this does not affect the rest of the plant. The dead wood can be cut off in the spring.

The tree Peonies are relatively free from disease though they are sometimes threatened with Botrytis blight. If a branch suddenly wilts and droops, it should be cut off and burned. Little will be lost except the diseased part, for Botrytis blight seldom kills a tree Peony. Spraying with Bordeaux mixture during the early growing stages will act as a preventive.

Tree Peonies are propagated by grafting, dividing and layering. Though most experts agree that grafting is by far the most rapid and satisfactory method, the propagation of these plants has long been a matter of dispute and experimentation. If grafted on "wild" tree Peony roots as is done by the Japanese, trouble is likely to appear in the form of untrue shoots from the roots. These shoots generally grow rapidly and succeed in killing the desired grafted variety. Grafting on roots of herbaceous Peony by the cleft method is much safer and is the method used by a majority of propagators. The tree Peony scion is grafted to the root tip of a herbaceous Peony. The herbaceous root tip has no bud

or eye which can sucker and has just enough vitality to support the tree Peony until it develops its own roots. If the herbaceous understock should sucker, its foliage would be distinct and easily removed. Grafting of tree Peonies is generally done in late August, when the plants have just entered their dormant period. This is continued through early September. Young grafts are aided considerably by heat, directly under a propagating bench, if plants are grafted in greenhouse. If grafts are planted in frames, a hotbed would be superior to cold frame, although many hundreds of grafts have thrived by being inserted in a regular cold frame, without any bottom heat. Dividing is another method of propagation but is considerably slower than grafting. Layering is less practical than dividing—it is slow and uncertain. Experiments with cuttings have thus far proven unsuccessful.

It is advisable to purchase two- or three-year-old vigorous plants. They are easier to establish and will bloom the second season after planting, sometimes the first season. If flowers are wanted the first year, purchase four- to six-year-old plants which have already bloomed. Seedlings may be desirable but only a small percentage of them are equal to the named varieties. Most are not as good as the named varieties. The seedlings generally run to magentas, a few whites and pinks, very few scarlets and almost never any crimsons. Quite often, seeds will germinate the first spring after planting but that is the exception rather than the rule. In most instances, seeds will germinate the second spring after planting. The habit of the seed is to make root growth first and then leaf growth second. Among the following are some of the better named varieties :

JAPANESE (Whites) . .	Tama-sudare (Jewelled Screen)
	Renkaku (Flight of Cranes)
	Yaso-okina (Venerable Man)
	Fuso No Tsukasa (God of Japan)
	Godaishu (Large globe-like)
	Gessekai (Kingdom of the Moon)
JAPANESE (Pinks) . .	Momo-yama (Mountain of Peach Orchards)
	Yae Zakura (Very Double Cherry)
	Sakura-jishi (The Lion in the Cherry Orchard)
	Shintenchi (New Heaven and Earth)
	Yachiyo-tsubaki (Long Hedge of Camellias)
	Hana-kisoi (Floral Rivalry)
JAPANESE (Reds) . .	Hodai (Reign of Chinese Emperor Ho)
	Hinode-sekai (Landscape at Dawn of Large Scale)
	Yo-meimon (The Most Gorgeous Gate of Japan)
	Ima-shojo (New Orange Qutang)
	Nissho (Sunbeam)
	Impumon (Gate of Opulence)

JAPANESE	(Purple, Violet, Mauve)	Hana Daigin (Minister of Flowers) Kenreimon (Gate of Kenrei) Kokamon (Gate of Koka) Horakumon (Gate of Abundant Pleasure) Rimpo (Bird of Rimpo)

Plants of the purple, violet and mauve group seem to be more vigorous than the maroons, scarlets and many pinks and whites and the flowers are usually larger.

EUROPEAN . . . . Of the European varieties, 'Reine Elizabeth' is the finest and best. It is a rich salmon pink. 'Bijou de Chusan' is the finest of the European whites. 'Souvenir de Ducher' (purple) and 'Jeanne D'Arc' (pink) are outstanding.

LUTEA HYBRIDS . . Of the Lutea hybrids, 'L'Esperance' is one of the better varieties. Other good ones are 'Satin Rouge,' 'Chromatella' and 'La Lorraine.' 'Souvenir de Maxime Cornu' and 'Silver Sails' are other good ones too. The Lutea hybrids are not as effective in the garden as the European or Japanese varieties because the flowers are borne close to the foliage of the plant and tend to droop or hang downward. In spite of their drooping habit, the Lutea hybrids are well worth growing for their perfect lemon-scented flowers. Recently, a variety of *P. lutea* was found in Tibet, which has erect blossoms on strong stems. Peony experts generally agree that the promise of much improvement is foreseen in the offspring of this Tibetan form, if it is crossed with the present Lutea hybrids. This is called *P. lutea Ludlowii.*

A single blossom floating in a shallow dish on a dining table is breath-taking in its beauty. The popularity of the tree Peony is constantly increasing. The supply has not been keeping up with the demand, which is easily understood to one who has seen or grown them. The tree Peony can be grown in any garden—small or large. It won't be long before they will be seen in most gardens for this aristocrat in the flower world—"the King of Flowers" should grow in every garden. Its great beauty lies in its flower and its fragrance is not the least of its virtues.

THE AZALEA WHITE FLY

*V. W. Fowler, B.Sc., A.R.C.S.**

ON October 3, 1952, specimens of *Rhododendron mucronatum* G. Don growing on Battleston Hill and in the Wild Garden at Wisley were found to be heavily infested with a species of White Fly. This proved to be *Aleyrodes azaleae* B. & M., the Azalea White Fly, an insect recorded only once before in Britain, at Edinburgh in 1931 on Azaleas imported from Belgium and Holland (Dept. Agric., Scotland, 1931).

A. azaleae B. & M. was first described by BAKER and MOLES, U.S.A., in 1930, following the repeated occurrence of light infestations of the insects on plants of *Rhododendron mucronatum* imported from Belgium and Holland during the years 1910–1920. In 1919 plants imported from Japan were found to be infested. BAKER and MOLES concluded that the insect was common in these countries (BAKER and MOLES, 1920). Further American reports appear at later dates (ESSIG, 1926; MACKIE, 1936) which refer to the establishment and increased distribution of the insect in the U.S.A., but not until 1937 was the degree of infestation considered severe enough to warrant concern (MACKIE, 1937). In 1942 the insect was recorded for the first time from Australia (PESCOTT, 1943).

Previous literature mentions only *R. mucronatum* as a host plant. Observations at Wisley show that other species, varieties and hybrids of the sub-series Obtusum have been attacked. Some measure of the difference in the degree of infestation on the various host plants was deemed necessary. Random samples of leaves from infested plants were collected and the maximum number of pupae occurring on a single leaf were noted. These results, together with a list of host plants, are tabulated below:

Genus Rhododendron, Series Azalea, Sub-series Obtusum

HOST PLANTS	MAXIMUM NUMBER OF PUPAE PER LEAF
Akebonar Ruykin	30
Aketsuba	4
Asagi	1
Gretchen	2
Hexe	2
Isochdori	1
linearifolium	3
mucronatum	110
mucronatum Noordtianum	20
mucronatum var. sekidera	36
Naomi	2
obtusum var. amoenum	1
pulchrum var. Maxwellii	1
scabrum	5

Samples taken February, 1953.

* Contribution from the Entomology Department, Wisley Laboratory.

The plants listed possess hairy leaves and stems and therefore constitute a different type of host plant from that favoured by the Rhododendron White Fly (*Dialeurodes chittendeni* Laing), which shows a preference for the smooth-leafed varieties of Rhododendron (FOX WILSON, 1935).

When infested plants were examined in October, 1952, all stages of the insect were present, which suggests that breeding is continuous throughout the summer period; the Rhododendron White Fly, however, is single brooded and very little overlapping of the stages occurs; in October, only the second larval stage is present (FOX WILSON, 1935).

Heavy infestations of *Aleyrodes azaleae* are associated with the production of copious amounts of honeydew, which, in coating the upper surface of the lower leaves, provides a suitable medium for the growth of sooty moulds (see Fig. 66). Such deposits prevent leaves from carrying out their normal functions and thus adversely affect the vigour of the plant. The feeding of the insects on the lower surface of the leaves does not appear to cause a mottling of the upper leaf comparable with that caused by the Rhododendron White Fly.

PRESCOTT (1943) advocated spraying infected plants with a nicotine sulphate wash consisting of one pint of white oil, one ounce of nicotine sulphate and five gallons of water. The success of DDT formulations against other species of White Fly suggests its use against *A. azaleae* and experiments in this connection are being carried out at Wisley.

The object of this note is to acquaint the growers of Rhododendron with the pest and in order that the extent of its distribution in this country may be ascertained, samples of suspected infestations should be sent to the Director, R.H.S. Gardens, Wisley.

Sincere thanks are due to MR. J. P. DONCASTER of the British Museum (Natural History) for kindly confirming the insect identification, and to MR. N. K. GOULD, Botanist at Wisley, for assisting with plant identifications.

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WISLEY TRIALS, 1952

CELERY

Twenty-five stocks of Celery were accepted for trial at Wisley during 1952 and in addition commercial stocks were obtained of the following control varieties: 'Wareing's Dwarf White,' 'Bibby's Defiance,' 'Clandon White,' 'White Perfection,' 'Clayworth's Prize Pink' and 'Standard Bearer Red.'

As a preventative against Celery Leaf Spot (*Septoria apii-graveolentis*) the seed was steeped in a 1 in 300 solution of formalin for three hours. The trial was sown on March 10, 1952, and pricked out in boxes on April 1, 1952. The ground was prepared by taking out 18-inch wide trenches 6 feet apart. The top spit having been removed from the trench, farmyard manure was incorporated with the second spit. Some of the soil was then replaced to leave the trench 6 inches deep. In April a base dressing was given at 2 oz. per square yard of both bone meal and sulphate of potash. The trial was planted in single rows on May 16, allowing 10 inches between plants. The plants grew well with the aid of overhead irrigation. Dustings of 5% D.D.T. dust were made at intervals to prevent an attack by the Celery Fly (*Acidia heraclei*). Frequent sprayings of colloidal copper spray were given to control Celery Leaf Spot.

The trial was inspected by the Sub-Committee of the Fruit and Vegetable Committee on November 21, 1952, and their recommendations for awards are given below. The number in brackets after the description of the variety is that under which it was grown in the trial.

White Varieties

NEW DWARF WHITE. (Raised by Messrs. Ferry-Morse Seed Co., Mountain View, California, U.S.A., introduced and sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancs.) **H.C.** November 21, 1952.—Height 24 inches, 5½ to 6 inches diameter, compact. Leaf stalks thick, broad, 12 inches long. Blanches well; good even stock. [5]

PRIZE WHITE. (Sent by Messrs. Nutting & Sons, Ltd., Merstham, Surrey.) **H.C.** November 21, 1952.—Height 33 inches, 4½ inches diameter. Leaf stalks medium thickness, broad, 15 to 16 inches long. Blanches well. [10]

STANTON DWARF WHITE. (Raised, introduced and sent by Messrs. Thoday & Co., Long Stanton, Cambridge.) **H.C.** November 21, 1952.—Height 36 inches, 5½ inches diameter. Leaf stalks medium thickness, broad, 12 to 14 inches long, some outer stalks slightly tinged pink at base. Blanches well. [4]

SUTTON'S SOLID WHITE. (Raised, introduced and sent by Messrs. Sutton & Sons, Ltd., Reading, Berks.) **H.C.** November 21, 1952.—Height 26 inches, 5½ to 6 inches diameter, compact. Leaf stalks thick, broad, 12 to 13 inches long. Blanches well; an even stock. [12]

Pink Variety

LAING & MATHER'S IDEAL. (Raised by the late Mr. Afflick, introduced and sent by Messrs. Laing & Mather, Ltd., Kelso, Scotland.) **A.M.** November 21, 1952.—Height 30 inches, 5 inches, diameter. Leaf stalks thick, broad, 14 inches long. Blanches well; a very uniform stock suitable for exhibition purposes. [17]

Red Variety

STANDARD BEARER RED. (Control variety obtained from Messrs. Watkins & Simpson, Ltd., 26–29 Drury Lane, Covent Garden, London, W.C. 2.) **H.C.** November 21, 1952.—Height 28 inches, 4½ to 5 inches diameter. Leaf stalks thick, broad 14 to 15 inches long. Blanches well; an even stock. [27]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1952 AND 1953

Camellia japonica 'Magnoliaeflora' A.M. February 17, 1953. This is an undoubtedly an outstanding variety and a very popular one too. The flowers are variable in size and colour. The largest of them are about 4 inches across and have fifteen petals coloured a varying shade of soft pink with some slightly darker stains on the reverse side. The stamens are clustered in a tight, small bunch and occasionally some are petaloid. Exhibited by Commissioners of Crown Lands, Windsor Great Park, Berks.

Chrysanthemum 'White Hope Valley' A.M. August 12, 1952, as a variety for exhibition. A double disbudded reflexed variety. Flowers 6 to 6½ inches diameter. Florets narrow, tubular, pure white. Shown by Messrs. J. & T. Johnson.

Chrysanthemum 'White Wings' F.C.C. August 26, 1952, as a variety for exhibition. Described R.H.S. JOURNAL, **77**, 110 (**A.M.** 1951). Shown by Messrs. J. &. T. Johnson.

Chrysanthemum 'Yellow Triumph' A.M. September 9, 1952, as a variety for exhibition. A double disbudded reflexed variety. Flowers 6½ to 7 inches diameter. Florets very long, broad, pointed, Aureolin (H.C.C. 3/1). Shown by Messrs. J. & T. Johnson.

ORCHIDS

Cymbidium 'Carillon' A.M. March 17, 1953. This plant was raised from the cross 'Babylon' × 'Carisbrook' var. 'Brilliance.' It was exhibited with a spike of ten flowers each 3½ inches across. The sepals and petals were bright pink with a deeper rosy reverse. The pale pink lip is flushed with orange yellow and marked with deep red. Exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cymbidium 'Lady Moxham' Horton Green var. A.M. March 3, 1953. An attractive variety raised from 'Alexanderi' Westonbirt var. × 'Sunrise' var. 'F. K. Sander.' The plant exhibited bore a tall spike of eight flowers, each nearly 5 inches in diameter. The perianth segments are pale pink, flecked with minute spots of light reddish-brown; the lip light pink blotched with deep red. Exhibited by John Moulson, Esq., 30 Horton Green, Bradford.

Cymbidium 'Perkin' A.M. March 3, 1953. The parentage of this variety is 'Rusper' × 'Ruskin.' The flowers, each 3½ inches across, are carried close together in a spike of nine or ten. The sepals and

petals are pale apple-green veined and faintly speckled with crimson. The lip is whitish, with a bold crimson-scarlet blotch at its tip. Exhibited by S. Tharp, Esq., 10 Farm Lane, Purley, Surrey.

Cymbidium 'Rose du Barry' A.M. March 3, 1953. This was raised by the exhibitor from the cross 'Dantolon' × 'Amber Flash.' Seven flowers, each 4 inches across, made up the inflorescence of the specimen exhibited. The sepals and petals are pale rose-pink, the lip broad, white, spotted with crimson. Exhibited by Sir William Cooke, Bt., Wyld Court, Hampstead-Norris, Newbury, Berks.

Cymbidium 'Runnymede' var. 'Superb' A.M. March 17, 1953. A hybrid Cymbidium with a parentage of 'Babylon' × 'Roxana.' It had thirteen flowers on a large curling spike with individual flowers nearly 5 inches across. The sepals and petals are greenish yellow suffused bronze and the reverse has prominent reddish-brown markings. The lip has bright reddish markings on a white background and an orange flush in the centre. Exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cymbidium 'Vieux Rose' F.C.C. March 17, 1953. An attractive variety shown with a large spike bearing seven flowers. The parentage is 'Rio Rita' var. 'Radiant' × 'Babylon' var. Individual flowers are 4½ inches across; the sepals and petals pale pink with a rosy brown reverse. The ground colour of the lip is white and it is strongly marked with dark red. In addition the lip has a white margin and a salmon yellow flush in the centre. Exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cypripedium 'Lady Clunas' var. 'Whatcroft Hall' F.C.C. December 2, 1952. The flower was 5 inches in diameter and of good form and substance. The dorsal sepal was 1¾ inch in diameter, white blotched maroon, with a pale green basal zone. The petals were broad, similar to the above in colour, but with the addition of a pale purple suffusion at the edges and with a paler green zone. Both were slightly undulate. The labellum was white, suffused with pale purple and minute deeper purple spots. The result of crossing *C. Delenatii* with *C.* 'Gertrude West.' Exhibited by Dr. Wm. Stirling, Whatcroft Hall, nr. Northwich, Cheshire.

Cypripedium 'Minster Lovell' A.M. March 17, 1953. This plant was obtained by crossing 'Diana Broughton' with 'Mona.' The flower is about 5 inches across and gives a general impression of greenish yellow. Upon closer examination the large dorsal petal is found to be a deep glossy green while the lip is a bright lemon yellow, and the remaining petals are a combination of the two colours. Exhibited by Leonard W. Brummitt, Esq., 30 Bloxham Road, Banbury.

Freesia 'Gloria Solis' A.M. February 17, 1953. Flower stems long and very strong; inflorescence seven–eight-flowered; flowers expanded, 1½–1¾ inch wide, 2½ inches long, Buttercup Yellow (H.C.C. 5) overlaid at mouth with orange, very fragrant. Its parentage is given as hybrid 802 × 801 and it is said to be very vigorous and free flowering

in habit. Raised by Mr. J. A. M. Goemans and exhibited by Messrs. Parigo Horticultural Co., Ltd., Bourne Road, Spalding, Lincs.

Freesia 'Orange Blossom' A.M. February 17, 1953. Flower stems long and very strong; inflorescence six–seven-flowered; flowers expanded, 1½–2 inches wide, 2½–2¾ inches long, Indian Yellow (H.C.C. 6) heavily overlaid with orange at mouth, exceptionally fragrant. The parentage is given as hybrid 701 × unnamed hybrid and it is said to be very vigorous in habit. Raised by Mr. J. A. M. Goemans and exhibited by Messrs. Parigo Horticultural Co., Ltd., Bourne Road, Spalding, Lincs.

Freesia 'Orange Princess' A.M. January 20, 1953. Flower stems long and very strong; inflorescence seven-flowered; flowers expanded, 1⅛ inch wide, 2 inches long, Indian Yellow (H.C.C. 6) overlaid at mouth with orange, sweetly scented. A good variety for market work as it packs well. Raised by Mr. J. A. M. Goemans as the result of a cross between 'Goldcup' and a selected orange seedling; exhibited by Messrs. Parigo Horticultural Co., Ltd., Bourne Road, Spalding, Lincs.

Freesia 'White Swan' A.M. March 3, 1953. Flower stems long and strong; inflorescence eight–nine-flowered; flowers widely expanded, 2½ inches wide, white with a slight tinge of cream in the throat, sweetly scented. The parentage is given as White 5019 × 'Snowdrift.' Raised by Mr. J. A. M. Goemans and exhibited by Messrs. Parigo Horticultural Co., Ltd., Bourne Road, Spalding, Lincs.

Peach 'Bushwood Beauty' A.M. August 26, 1952. Parentage unknown. Fruit medium to large, mid to end of August, almost round but slightly flattened at stalk end, even, suture shallow, small nipple in medium depression. Colour pale yellow almost covered with deep red speckling and with bright crimson flush on side exposed to the sun. Flesh creamy white with few red streaks next the stone; very juicy, quite sweet and of good flavour. Stone little clinging, large, sharply pointed, much pitted and channelled. Leaves long and rather narrow, finely serrate; glands round. Raised and exhibited by Mrs. M. Tuckey, 34 Bushwood Road, Kew, Surrey.

Peach 'Granny' A.M. August 26, 1952. Parentage unknown. Fruit medium to large; mid to end of August. Round but slightly flattened at apex and base, fairly even, suture rather deep especially near apex. Colour pale greenish yellow, one side of fruit covered with deep crimson flush and with much speckling, sometimes turning purplish red near apex. Flesh creamy yellow streaked red next the stone, juicy, good flavour. Stone large, clinging, with large deep channels. Leaves medium, fairly narrow, curved serrate; glands round. Raised and exhibited by E. A. Strehler, Esq., 11 Cranbourne Drive, Pinner, Middx.

Pelargonium 'Edward Humphris' A.M. February 17, 1953. A pure white Zonal Pelargonium of great excellence. The individual flowers measuring 2 inches across are of good shape and substance and are borne in a compact well rounded truss held erect on a strong stem. This variety is the result of a series of selections and crosses from a white variety. Raised by Mr. E. Humphris and exhibited by R. F. W. Cartwright, Esq., Aynho Park, Banbury, Oxon.

BOOK NOTES

"The Physiology of Seeds." By Dr. William Crocker and Dr. Lela Barton. 267 pp. (Chronica Botanica Company, Mass., U.S.A. and Wm. Dawson & Sons, Ltd., London, W.C. 2.) $6.50.

The physiology of seeds is naturally a subject of great interest to most horticulturists. In this book the authors summarize a great deal of the work that has been carried out on the physiology of germination and especially the investigations of the authors themselves at the Boyce-Thompson Institute.

There are however various works and papers to which one would have expected reference in such a volume. Thus the classical work of Becker on the germination of heteromorphic seeds is ignored. Although the influence of seed size is dealt with some of the important papers are omitted. There is a chapter on seed production but no reference to the only extensive treatment of this subject namely the reviewer's *Reproductive Capacity of Plants*. Again, there are few aspects of germination that have a more extensive literature than that concerned with the influence of light but this is dealt with in little more than a page whilst the genetical differences with respect to light response in different strains of the same species, the interrelations of light and temperature and the action of inhibitors are alike phenomena of too great interest to be ignored or cursorily treated.

Nevertheless if we do not regard the work as comprehensive and recognize the limitations of emphasis it should serve as a very useful introduction for those unfamiliar with the subject which is one that has a literature as widely scattered as it is extensive and which is so complex with respect to the variations of both the internal and the external environmental conditions involved.

E. J. SALISBURY

"Lilies in their Homes." By A. C. Maxwell. Illus. 256 pp. (Collins.) 16*s*.

Mrs. Maxwell approaches her subject from a fresh and welcome viewpoint. She describes Liliés, not as we see them in small groups amongst alien plants, but as they grow wild "in their thousands like great patches of red vermilion" among the shrubs and grasses. The first section of the book gives an interesting chapter to each part of the world that has native Lilies. The middle one deals briefly but clearly with propagation, hybridization, pests and diseases. The third part supplies an alphabetical list of species and hybrids with useful advice on cultivation. There are two good indexes and excellent photographic illustrations of sixteen species. It is perhaps misleading to describe the basal rot fungus attacking Lily bulbs as the Fusarium mite, and to assert that slugs detest bracken. After mulching with bracken for many years we have found that old bracken provides an ideal home for slugs. It is to be hoped that in a second edition more careful proof-reading will correct spelling mistakes of names. For instance, the name of one eminent Lily grower is spelt in three different ways. But these are minor criticisms and the book is undoubtedly a reliable addition to others on this subject.

E. K. FIELD

"All about African Violets." By Montague Free. 304 pp. Illus. (The American Garden Guild & Doubleday & Co. Inc.) $3.50.

This book deals with an attractive genus of plants, that was first introduced into this country some sixty years ago, with the introduction from Eastern Tropical Africa of *Saintpaulia ionantha* with its beautiful violet-blue flowers. Since then other species have been introduced with much the same colour. Of recent years a number of beautiful coloured forms and varieties, ranging from the deepest blue, purple, red to the purest white with many intermediate shades have developed, chiefly in America, where they have become very popular, being used extensively for living-room decoration, and their cultivation apparently has developed into something much more than a hobby. It is chiefly of these various forms of flowers and foliage that the book deals and it must be very nearly correctly named *All about African Violets*, for there cannot be much more to add. It gives much information regarding the cultivation, in some cases, not always what one would look upon as natural conditions; whether because of such conditions, or because many of the new forms and varieties are weaker, or have a

more delicate constitution, than the well-known species, much is mentioned of pest and diseases that attack them; fortunately much advice is given to combat these troubles.

Packing of plants for transport, preparation for shows and points used for judging are dealt with, as well as a glossary of technical terms, as well as the pronunciation of scientific names used in the book. Apart from the list of species and how they can be recognized, it includes very many named varieties, of various shades, colour and their classification as well as the examination of foliage. The many coloured plates are attractive, and from the many good photographs it is easy to gather what they are intended to illustrate. The book is well written, easy to read and should be quite an addition to the library of those interested in African Violets.

F. G. PRESTON

"Rock, Wall and Water." (The Studio Gardening Annual, Volume 4.) By F. A. Mercer and Roy Hay. 142 pp. Illus. (The Studio Publications.) 18*s*.

It is recognized that the best way to convey information to the beginner is by means of pictures if the subject permits of such representation.

This volume, which forms No. 4 of the series of Studio Garden Annuals fulfils this condition lavishly. It is crammed with illustrations of a very high quality.

The list of contributors guarantees that, in the main, the advice given is based on the authors' experience, not a rehash of other people's writings.

I hesitate to criticize anything written by that expert grower of rock plants, Mr. Frank Barker, but I do not think he emphasizes sufficiently that wall gardening for anything but the commoner rampers such as certain Dianthus or Iberis or Helianthemum requires much more skill than straightforward rock gardening. I suggest that even a two-foot wall should have a batter and that one inch of soil between the stones is too much. Rain always eventually washes the soil out of such wide spaces despite bits of turf and even bits of stone. This means that the plants have part of their roots exposed. The only way to grow the better things in walls, admittedly by far the best system for many rarities, is to plant as the wall is built and to keep the crevices to a quarter of an inch at the most.

Water in the right place and in sufficient volume can be very beautiful, but puddles in the garden do not add to its beauty and as most if not all bog and water plants grow with astounding vigour, I think that they should not be introduced into any garden which is not of considerable size.

The lists of plants at the end of each section are most comprehensive and up to date.

To the beginner in these pleasant aspects of gardening this book is to be recommended.

E. B. ANDERSON

"Cactus and Succulents." By G. Gilbert Green. Illus. 238 pp. (Faber and Faber Ltd., London.) 36*s*.

This well-illustrated book, which covers both Cacti and the other succulent plants, is in two parts. The first deals with cultivation in heated greenhouses but with more emphasis on the treatment of plants on a window sill or in an unheated greenhouse; lists of suitable plants are included, but the author has rather over-estimated the hardiness of some of the species recommended. The second part consists of two "Dictionaries." One is devoted to the Cacti which are arranged, in accordance with the classification of Britton and Rose, under Tribes and Sub-Tribes, though, for ease of reference, it would have been better if all the genera had been in alphabetical order, especially as the classification has already been given in a previous chapter. In the second "Dictionary" the other succulent genera are listed alphabetically, except those belonging to the family Aizoaceae, which are grouped together under "The Mesembryanthemums," and the genus Mesembryanthemum is omitted. The selection of species included under each genus seems to be quite haphazard, and nearly half of those illustrated are not referred to in the text, indeed there are even six genera illustrated to which no reference has been made. The descriptions of individual species have been so abbreviated that they are quite inadequate to enable readers to identify unnamed specimens in their collections, though this is the help that collectors most need. The work seems to be a compilation from various sources, put together with little understanding and with no attempt at uniformity of treatment. It is a great pity that the contents are not more worthy of the very high standard of production set by the publishers.

VERA HIGGINS

"Succulent Plants other than Cacti." By A. Bertrand. English Edition by Vera Higgins, V.M.H. London, 1953. (Crosby Lockwood & Son.) 10 + 1 coloured and 20 monochrome plates. 8vo. 112 p. 16*s*.

This handbook is an admirable companion to "Cacti" by Bertrand and Guillaumin, and doubly welcome to combat the Cactus monopoly beloved of popular writers.

To select from over 3,000 species scattered among two dozen different families, and to present the plants attractively and without bias is no mean task, especially without recourse to technical language. M. Bertrand is aware of the problems of balance and layout, and solves them ably. The succulents are dealt with under their respective families: a procedure satisfying both to the botanist and to the grower, who finds plants of similar habit and cultural requirements grouped together. The descriptions are terse but to the point, stressing distinguishing characters, and in this they are helped by well-chosen illustrations which are cited in the text. Incidentally, as the splendid dust-cover plate of *Stapelia hirsuta* is not repeated inside, readers may like to save it from damage by pasting it on the fly-leaf.

Especial credit is due to Mrs. Higgins for her editorial work, and to the publisher for the excellent presentation. Brief cultural notes are given: the soils recommended are generally poorer and the temperatures higher than most successful growers here use. Misprints are rare (I think the *Orostachys* species have been transposed). Finally there is a short glossary, and an index which is a model of clarity.

G. D. ROWLEY

"Flowers of the Coast." By Ian Hepburn. Illus. 236 pp. New Naturalist Series. (Collins.) 25*s*.

The flowers of the cliffs, salt marshes and sand-dunes round our coast are among the most interesting and beautiful members of our British Flora. Mr. Hepburn wisely treats the different habitats from the ecological aspect and in addition there is a short résumé of the physiographical background by J. A. Steers. Although so much visited, it is surprising that in our country the flora of the immediate coast is still one of the least affected by man.

The majority of coastal plants are restricted to one narrow environment and the flora changes completely, often within a few yards as one walks inland. This specialization to a particular environment has always been of great interest to botanists and naturalists and we owe a debt of gratitude to Mr. Hepburn for this clearly phrased and readable account. This book should also prove of great assistance to gardeners with gardens close to the sea since it discusses the plants which can be established to bind the sand dunes and shingle and also those which will withstand salt-spray.

As usual, with this series, the volume is lavishly illustrated and some of the colour plates are very beautiful, although I have yet to see a "yellow" tamarisk such as that portrayed in Plate 8. The text more accurately describes the flower as pink!

PATRICK M. SYNGE

The following books have been received:

"The Countryman's Workshop." By James Arnold. (The Phoenix House Ltd.) 10*s*. 6*d*.

"The Better Window Boxes." By G. D. Hardwicke. (The Phoenix House Ltd.) 1*s*. 9*d*.

"Weinau einmal anders." By Lenz Moser. 313 pp. Illus. (Rohrendorf bei Krems.)

"Styling Corsages with Garden Flowers." By Mary Hazel Drummond. 247 pp. Illus. (The Macmillan Company.) $4.75.

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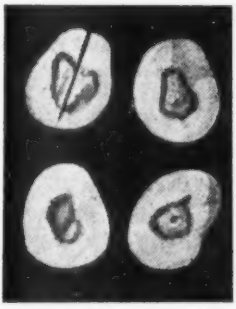

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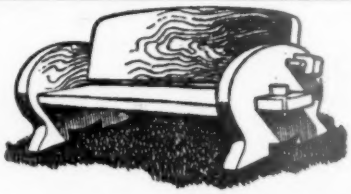

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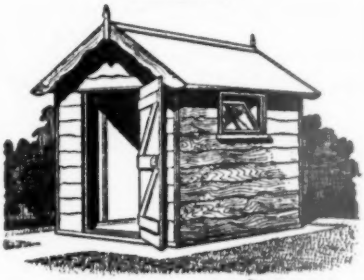

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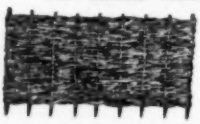

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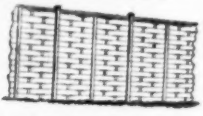

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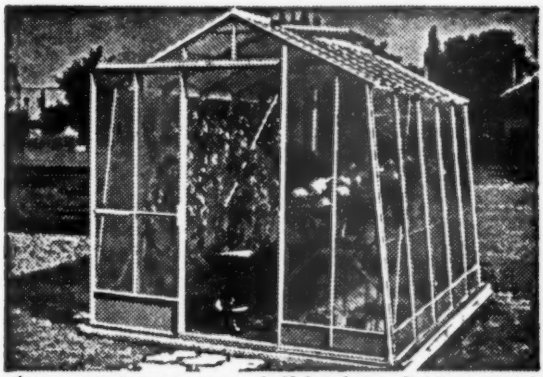

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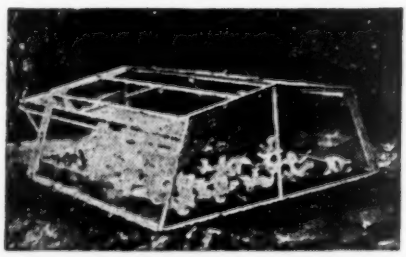

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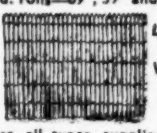

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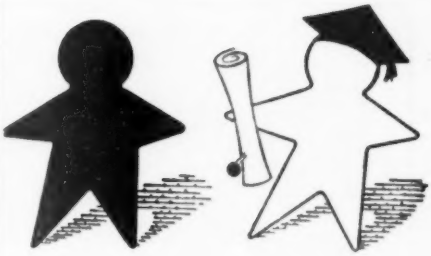

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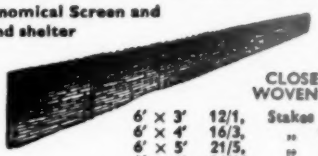

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18 in.	3	0	4	0	5	0	6	0
2 ft.	4	0	6	0	7	6	10	0
2½ ft.	5	0	7	0	10	0	15	0
3 ft.	6	0	8	0	12	6	17	6
4 ft.	10	0	13	6	22	6	27	6
5 ft.	25	0	30	0	35	0	40	0
6 ft.	30	0	35	0	40	0	45	0
7 ft.	40	0	45	0	50	0	60	0
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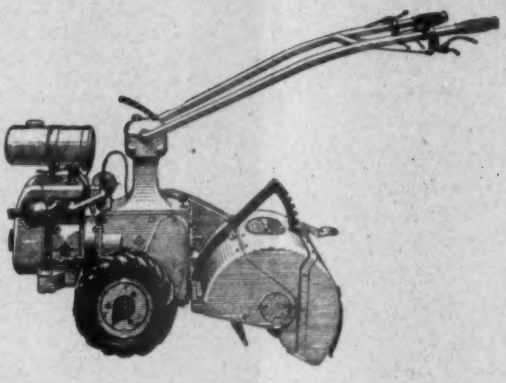
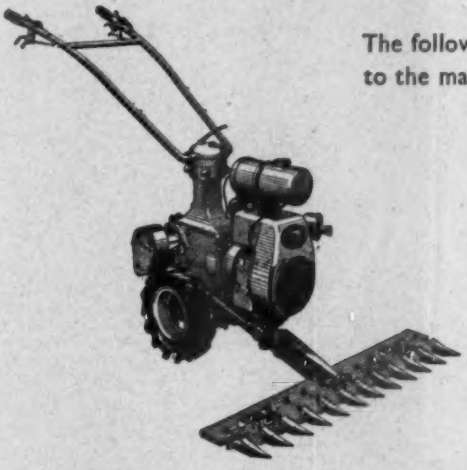


The 1953 model of the Monrotiller, the machine that set a new standard in motor cultivators when introduced in 1951.



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